Chapter 1 Hardware Overview

Chapter 1 Contents

Figures

Tables

1.1 System Features

Dynabook Satellite C40-G/ Satellite Pro C40-G is a Slim and Light entry notebook PC based on the mobile Intel Comet Lake U series processor, providing high-speed processing capabilities and advanced features. The computer employs a Lithium Ion battery that allows it to be battery-operated for a longer period of time. The display uses 14-inch FHD and HD LED panel, at a resolution of 1920x1080 and 1366x768. The CPU package is BGA type.

The computer has the following features:

- Processor
  - CPU is mobile Intel Comet Lake U Processor:
  - Intel Comet Lake U i3 CPU
    - i3-10110U (2.10 G) Hz
  - Intel Comet Lake U i5 CPU
    - i5-10210U (1.60 G) Hz
  - Intel Comet Lake U i7 CPU
    - i7-10510U (1.80G) Hz
  - Intel Comet Lake U i7 CPU i7-10710U (1.10G) Hz
  - Intel Intel® Celeron® Processor 5205U (1.90G) Hz

- Host Bridge System Controller
  - System Controller: Intel integrated Host bridge system into CPU.

- Graphics
  - Internal: Intel® UHD Graphics for 10th Gen Intel® processors

- Memory
  - The computer has 1 SO-DIMM DDR4 memory particles which support single channel. DDR4 is driven at 1.2V. It can incorporate up to 16GB of memory configuration.
  - Using the following sizes of memory configuration:
    - 4096 MB SO-DIMM DDR4-2666MHz
    - 8192 MB SO-DIMM DDR4-2666MHz
    - 16384 MB SO-DIMM DDR4-2666MHz

- Solid State Drive (SSD)
  - The computer accommodates SSD with following types: □ SSD M.2 128GB/256GB/512GB (SATA/PCIe)

- Display
  - LCD displays come in the following type at resolution 1920x1080 and 1366x768:
    - 14” FHD 250nits eDP 1920x1080 LED display
    - 14" HD 220nits eDP 1366x768 LED display

- On-Board LAN
  - The internal LAN supports 10/100/1Gbit Ethernet, enabling connection to a LAN at up to 1Gbps. It supports Wake-up on LAN from S3/S4 and PXEb oot support. This internal LAN has RJ45 jack to directly accommodate a LAN cable.

- Wireless LAN
  - The internal Mini Card slot supports Intel Jefferson Peak1 (802.11ac+BT5.0),

- Intel Jefferson Peak2 (802.11ac+BT5.0), Non-Intel CM251(802.11ac+BT5.0), and Intel Harrison Peak2, 802.11ax+BT5.1 Wireless LAN cards. The Antenna has two wires dual band.

- Sound System
  - REALTEK ALC256 integrated audio controller supports multimedia. The sound system contains the following:
    - Stereo speakers
    - External microphone &Headphone combo jack
    - Integrated microphone (with Webcam)

- Keyboard
  - Many kinds' countries keyboard, which is Non-backlight keyboard with UK/US/ keyboard.

- Pointing Device
  - Click Pad pointing device support. Gesture support for precision function as Tapping/Tap and Drag/Pinch zoom/Up to 4 fingers.

- USB Port
  - The computer has three USB ports, two for USB3.0 type A, Another One is USB type C (USB3.1 Gen1/DP/PD). High-Speed USB3.0/3.1 allows data transfers up to 5Gbps

- HDMI Out Port
  - A HDMI monitor can be connected to HDMI Out Port on the computer.

- Bridge Media Slot
  - This slot is for your memory card requirements like SD/Mini SD (need adaptor)/Micro SD (need adaptor)/SDHC/SDXC and MMC Cards to provide memory card read on your computer.

- Webcam with embedded internal microphone

■The computer has an internal camera. It supports HD (0.9M) with Camera shutter. It also supports Camera LED, LED is on when Camera working. The internal microphone is embedded in this camera module.

■θ Battery

■The computer has a 2 Cell (6000mAh) Lithium Ion battery pack.

■θ Figures 1-1/1-2/1-3 and 1-4 show the computer and its system unit configuration, respectively.

Figure 1-1 ID Parts Description Placement

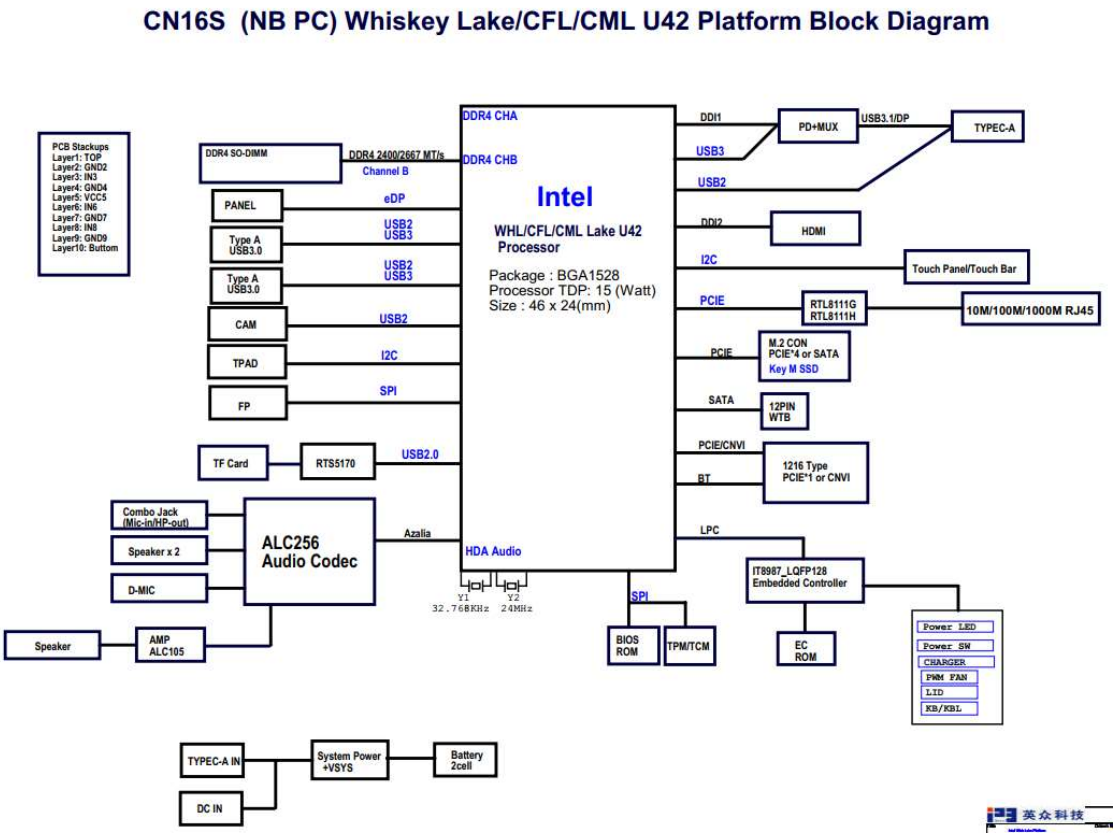


Figure 1-2 Computer Block Diagram

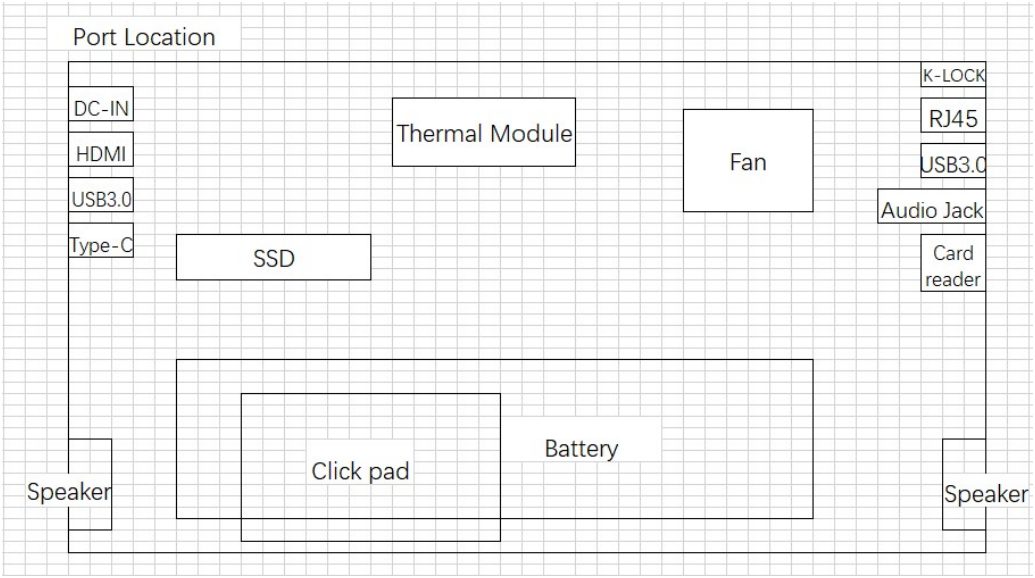


Figure 1-3 System Board Configurations

1.2 System Unit Components

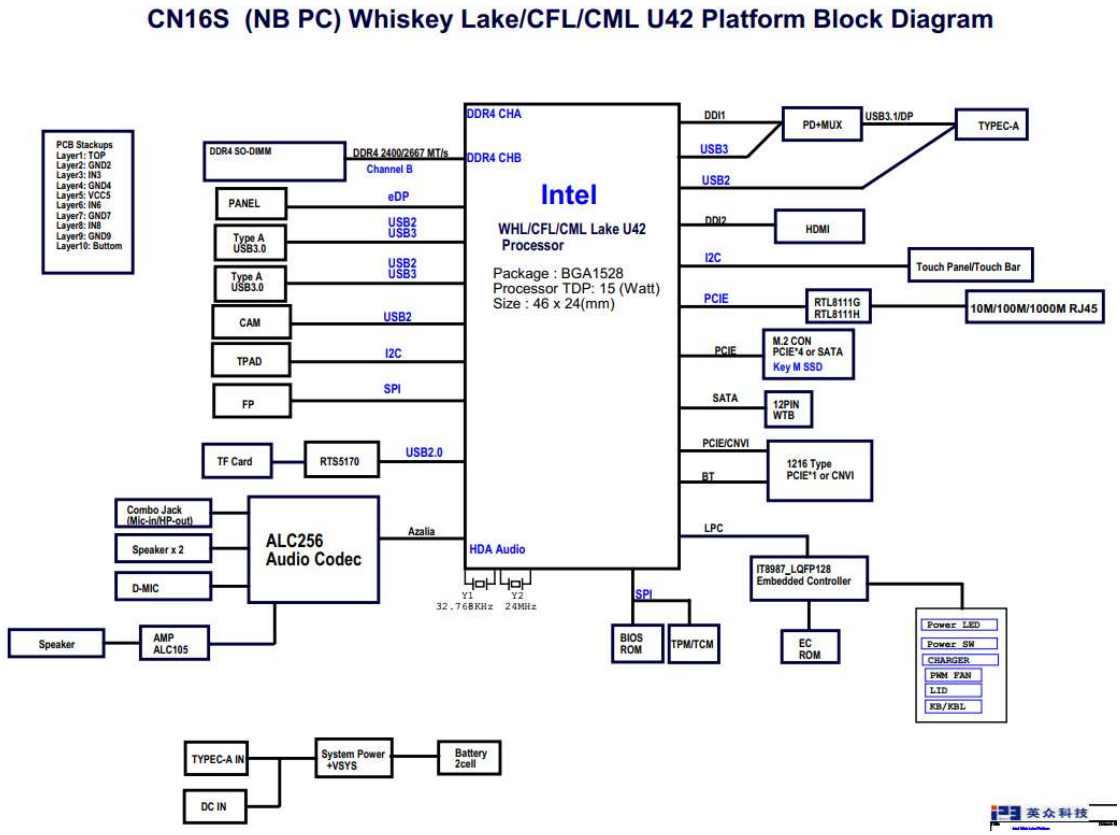


Figure 1-4 System Unit Block Diagram

The system unit of the computer consists of the following components:

- Processor: CPU is mobile Intel Comet Lake U Processor:

  Intel Comet Lake U i3 CPU

  i3-10110U (2.10 G) Hz

  Intel Comet Lake U i5 CPU

  i5-10210U (1.60 G) Hz

  Intel Comet Lake U i7 CPU

  i7-10510U (1.80G) Hz

  Intel Comet Lake U i7 CPU i7-

  10710U (1.10G) Hz

  Intel Intel Celeron Processor CPU

  5205U (1.90G) Hz

- Memory: The computer has 1 SO-DIMM DDR4 memory particles which support single channel. It can incorporate up to 16GB of memory configuration.

  - PC4-2666 (2666MHz) SO-DIMM DDR4 supported
  - DDR4 1.2V operation
  - Data transfer rates: PC4-2666 on i3/i5/i7 CPU, PC4-2400 on Celeron CPU

- BIOS ROM (Flash memory)

 Storage Size

Nv Storage size: 128K

- NVRAM_BACKUP size: 192k
- FV_MAIN_WRAPPER size: 4992k
- FV_MAIN_WRAPPER free space: 2609k
- FV_DATA size: 832k
- FV_DATA free space: 3k
- FV_NETWORK_WRAPPER size: 2240k
- FV_NETWORK_WRAPPER free space: 1648k
- FV_BB size: 448k
- FV_BB free space: 65k
- FV_BB_AFTER_MEMORY_WRAPPER size: 256k
- FV_BB_AFTER_MEMORY_WRAPPER free space: 62k
- FV_FSP_S size: 576k
- FV_FSP_S free space: 215k
- FV_FSP size :448K

System Controller

 Mobile Intel integrated Comet Lake into CPU.

- System Memory Interface
- Technology Enhancements of Intel Fast Memory Access
- System Memory Frequency
- DRAM Clock Generation
- DRAM Reference Voltage Generation
- Processor Graphics Controller(GT)
- Digital Display Interface(DDI)
- Platform Environmental Control Interface(PECI)
- Advanced Configuration and Power Interface (ACPI) states supported
- Processor Core Power Management
- Integrated Memory Controller (IMC) Power Management
- Graphics Power Management
- Intel Turbo Boost Technology 2.0 Power Control
- Configurable TDP (cTDP) and Low Power Mode
- Adaptive Thermal Monitor
- Digital Thermal Sensor
- Intel Memory Thermal Management
- Scenario Design Power(SDP)

θ Card Bus Controller

□ REALTEK RTS5170

– Memory Card Reader Controller

θ Audio Controller

REALTEK ALC256 integrated audio controller supports multimedia. The sound system features contain the following:

□ integrates a 4-channel DAC, 4-channel ADC, and a stereo Class-D Speaker Amplifier with 2 watts per channel output power.

□ 4-channel ADC that supports 16/20/24-bit PCM format for independent two stereo channel audio inputs. All ADCs support 44.1K/48K/96/192KHz sample rates.

□ 4 GPIOs for customized applications (pin-shared with digital microphone interface and SPDIF-OUT)

□ Supports combo jack with stereo headphone output and mono microphone input on a 4-pole jack

□ Volume synchronization for PCBEEP in D0/D3 mode

θ KBC/EC (Keyboard Controller/Embedded Controller)

A KBC IT8987-128 chip is used to serve as KBC/EC and Super IO: □ KBC

– Scan controller function
– Interface controller function

□EC

– Power Supply sequence control
– Overheat shutdown support
– LED control
– Beep control
– Cooling fan speed control
– Universal I/O port
– Battery capacity check

- Flash memory reprogramming function
- EC access interface
- I2C communication control

θ Clock Generator

□ Mobile Intel Comet Lake -U CPU integrated Clock Generator

- Generating the clock signal required for the system

θ LAN Controller

□ REALTEK _ RTL8111H-CG 10/100M/1000M bit

- Fully compliant with IEEE 802.3,
- Supports PCI Express 1.1
- Transmit/Receive on-chip buffer support
- Supports PCI MSI (Message Signaled Interrupt) and MSI-X
- Wake-On LAN and “RealWoW!” Technology (remotewake-up) support
- Supports Microsoft Wake-up frame

θ Wireless LAN Controller

□ Support following M.2: CNVio2 wireless LAN cards

- Intel Jefferson Peak1, 802.11ac+BT5.0

  Intel Jefferson Peak2, 802.11ac+BT5.0

  Non-Intel CM251, 802.11ac+BT5.0
- Intel Harrison Peak2, 802.11ax+BT5.1 □ Data Rate

Intel Jefferson Peak1

- IEEE 802.11b: 11Mbps
- IEEE 802.11a/g: 54Mbps
- IEEE 802.11n: 150Mbps
- IEEE 802.11ac: 433.3Mbps

Intel Jefferson Peak2

- IEEE 802.11b: 11Mbps
- IEEE 802.11a/g: 54Mbps
- IEEE 802.11n: 258Mbps
- IEEE 802.11ac: 1366Mbps

Non-Intel CM251

- IEEE 802.11b: 11Mbps
- IEEE 802.11a/g: 54Mbps
- IEEE 802.11n: 150Mbps
- IEEE 802.11ac: 433Mbps

Intel Harrison Peak2

- IEEE 802.11b: 11Mbps
- IEEE 802.11a/g: 54Mbps
- IEEE 802.11n: 300Mbps
- IEEE 802.11ac: 866.7Mbps
- IEEE 802.11ax: 2.4Gbps

□ Frequency Channel

Intel Jefferson Peak1

- IEEE802.11b/g: 2.4GHz
- IEEE802.11n: 2.4GHz/5GHz
- IEEE 802.11a: 2.4GHz
- IEEE802.11ac: 5GHz

Intel Jefferson Peak2

- IEEE 802.11a/b/g: 2.4Ghz
- IEEE 802.11n: 2.4Ghz/5Ghz
- IEEE 802.11ac: 2.4Ghz/5Ghz

Non-Intel CM251

- IEEE802.11b/g :2.4GHz
- IEEE802.11n :2.4GHz/5GHz
- IEEE802.11a: 5GHz
- IEEE802.11ac: 5GHz

Intel Harrison Peak2

- IEEE802.11b/g :2.4GHz
- IEEE802.11n :2.4GHz/5GHz
- IEEE 802.11ax :2.4GHz/5GHz
- IEEE802.11a/ac: 5GHz

1.3Solid State Drive (SSD)

The M.2 SATA/PCIe SSD is fully consist of semiconductor device and using NAND flash Memory which has a high reliability and a high technology in a small form factor for using a SSD

The SSD is shown in Figure 1-5 and some of its specifications are listed in Table 1-1.

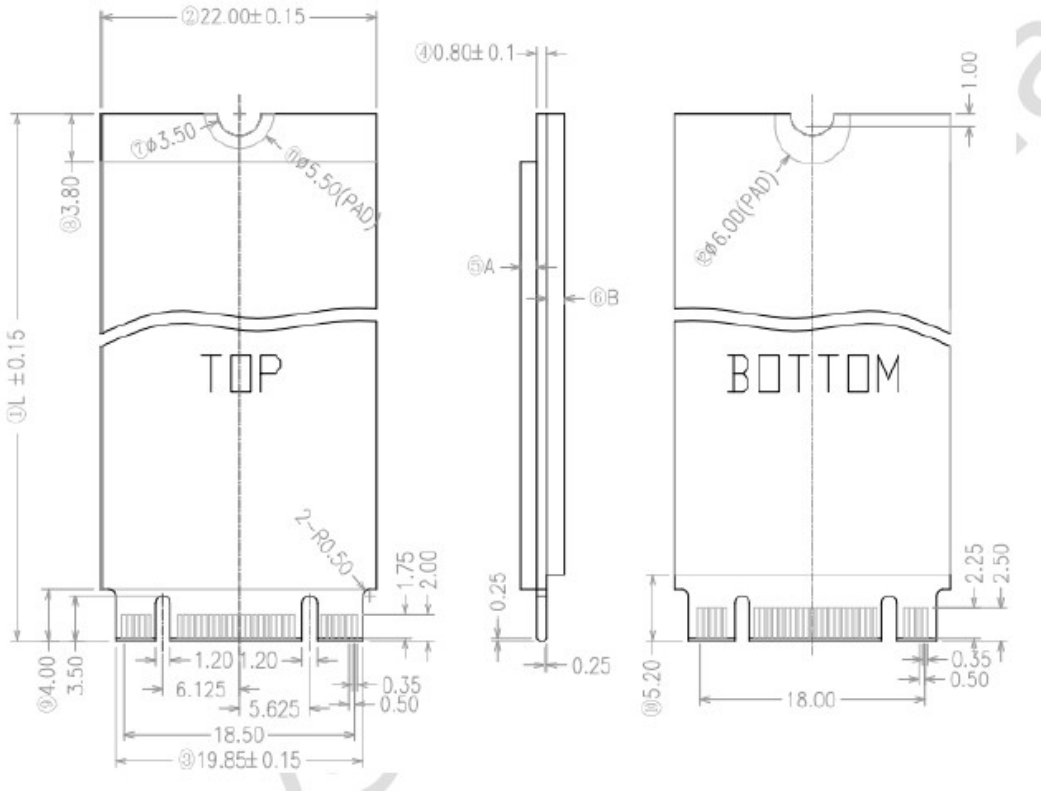


Figure 1-5 Solid state driver

Table 1-1 SSD Specifications

Item	Read	Write	Bytes per sector
M .2 128G SATA SSD	520MB/s	480MB/s	512Byte
M .2 256G SATA SSD	550MB/s	490MB/s	512Byte
M .2 512G SATA SSD	550MB/s	500MB/s	512Byte

Item	Read	Write	Bytes per sector
M .2 128G PC Ie SSD	2250MB/s	600MB/s	512Byte
M .2 256G PC Ie SSD	2500MB/s	1100MB/s	512Byte
M .2 512G PC Ie SSD	2500MB/s	2100MB/s	512Byte

1.4 Pow er Supply

The power supply unit provides many different voltages for the system board and performs the following functions:

1. Power input monitor

 Checks whether the DC power supply (AC adapter) is connected to the computer.

 Checks whether the battery pack is connected to the computer.

Monitors the DC power supply input (AC Adapter output).

2. Power supply's internal control

 Turns on and off the battery pack charging power supply.

 Issues a charging current instruction to the PWM control IC of the battery pack charging power supply.

 Controls the supply of power to the system block (load/logic circuit side).

 Controls forced shutdown if the power supply malfunctions.

3. Logic circuit control

□ Instructs the gate array to enable/disable tuning the power on. □

Controls power-on/off operation.

4. Status display

□ Turns on the Power.

□ Battery indicator (in Blue or Amber or Amber Blink).

5. External interface

□ Performs communication through the SMBUS (via the internal EC/KBC).

□ Transfers the power supply operation mode.

6. Output monitor

□ Monitors the voltage, over voltage, input/output current of the battery pack.

□ Monitors the internal temperature of the battery pack.

1.5 Batteries

The computer has the following type of battery:

θ Main Battery Pack

Table 1-2 list the specifications of battery.

Table 1-2 Battery Specifications

Battery Type		Material	Output voltage	Capacity
Main Battery Pack	2 Cell	Lithium Ion	7.6 V	6000 mAh

1.51 Main Battery

The main battery pack serves as the computer's main power source when the AC adapter is not attached. The main battery maintains the state of the computer

so that it can resume it.

1.52 Battery Charging Control

Battery charging is controlled by TI BQ24780S. When AC adapter and battery pack are attached to the computer, BQ24780S controls the charge on/off state and detects a full charge.

θ Battery Charge

When the AC adapter is attached, the battery is charged by off-state charge when the system is powered off or by on-state charge when it is powered on.

Table 1-3 Quick/Normal Charging Time

State	Charge Time	
Off-State Charge	2 Cell	Less than 4 hours
On-State Charge	2 Cell	over 4 hours

NOTE: The time required for normal charge depends on the power consumption by the system. Using the fluorescent lamp and frequently accessing the disk consume much power and lengthen the charge time.

Any of the following cases stops battery charge:

1. The battery becomes fully charged.
2. The AC adapter or battery pack is removed.
3. The battery or AC adapter voltage is abnormal.

θ Detection of full charge

A full charge is detected only when the battery is being charged by quick or normal charge. A full charge is detected when either of the following conditions is met:

1. The current in the battery charging circuit drops below the

predetermined value.

2. The charging time exceeds the fixed limit.

Chapter 2
Troubleshooting

Chapter 2

Contents

2.1 Outline

This chapter describes the fault diagnostic procedures for field replaceable units (FRUs) in the computer. The FRUs covered here are as follows:

1. System Board	2. Keyboard	3. Display	4. Memory
5. SSD	6. Audio	7. Touchpad	8. USB Port
9. Headphone Port	10. Microphone Port	11. HDMI Port	12. TF Card Port
13.Type-C Port	14. Camera	15. Wireless LAN	16. Battery Pack
17. Bluetooth	18. LAN	19.fingerprint	20.BIOS

This Model support two types platform, one is Intel Comet lake with UMA, other one is Intel Comet lake with dGPU. See Chapter 4 for the procedures to replace FRUs and Chapter 3 for the procedures to use test programs.

The following tools are required to perform the diagnostic procedures:

1. USB Memory	2. External monitor with HDMI In Port	3. Headphone
4. Microphone	5. TF Card	6. Type-C Cable

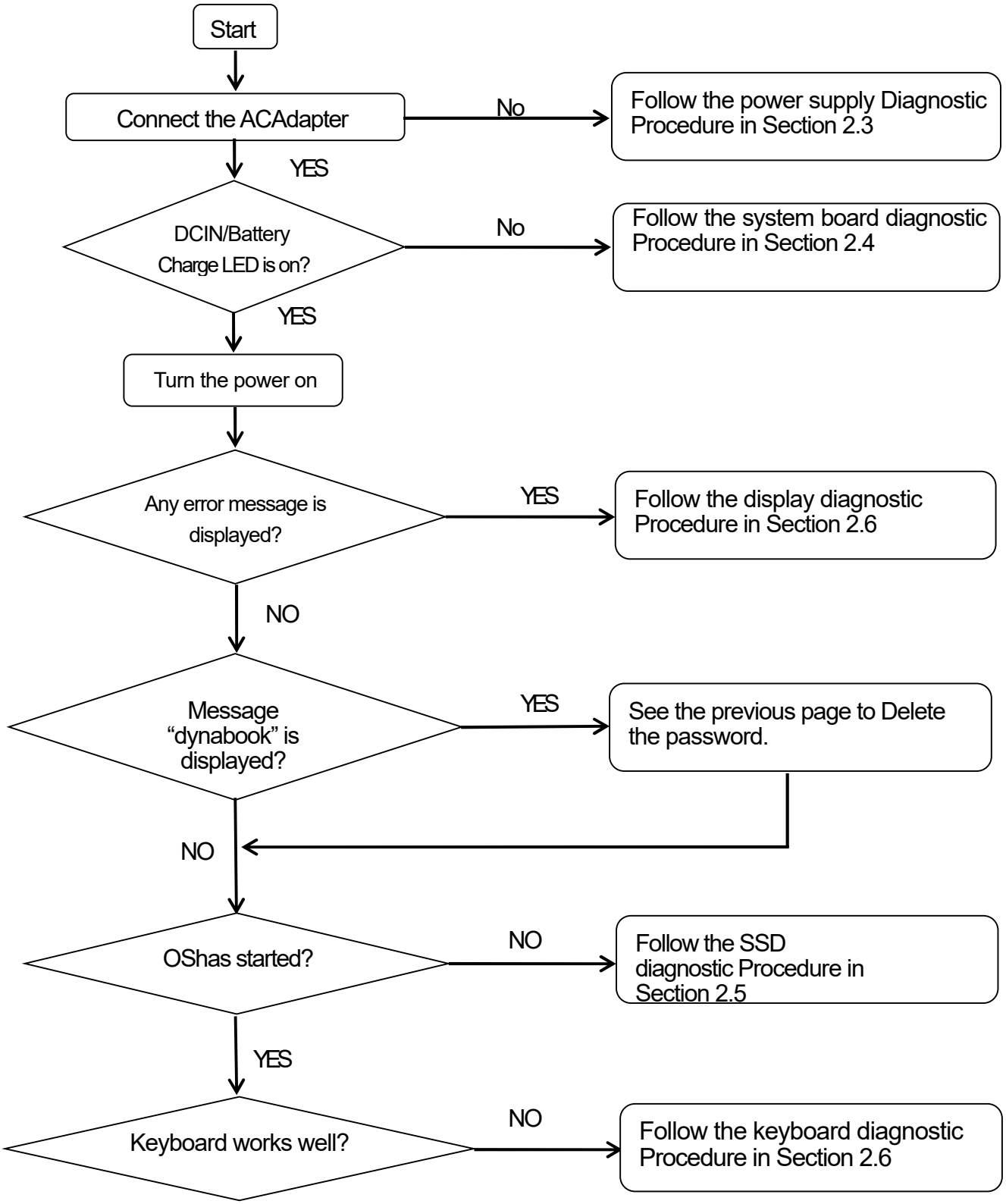
2.2 Basic Flowchart

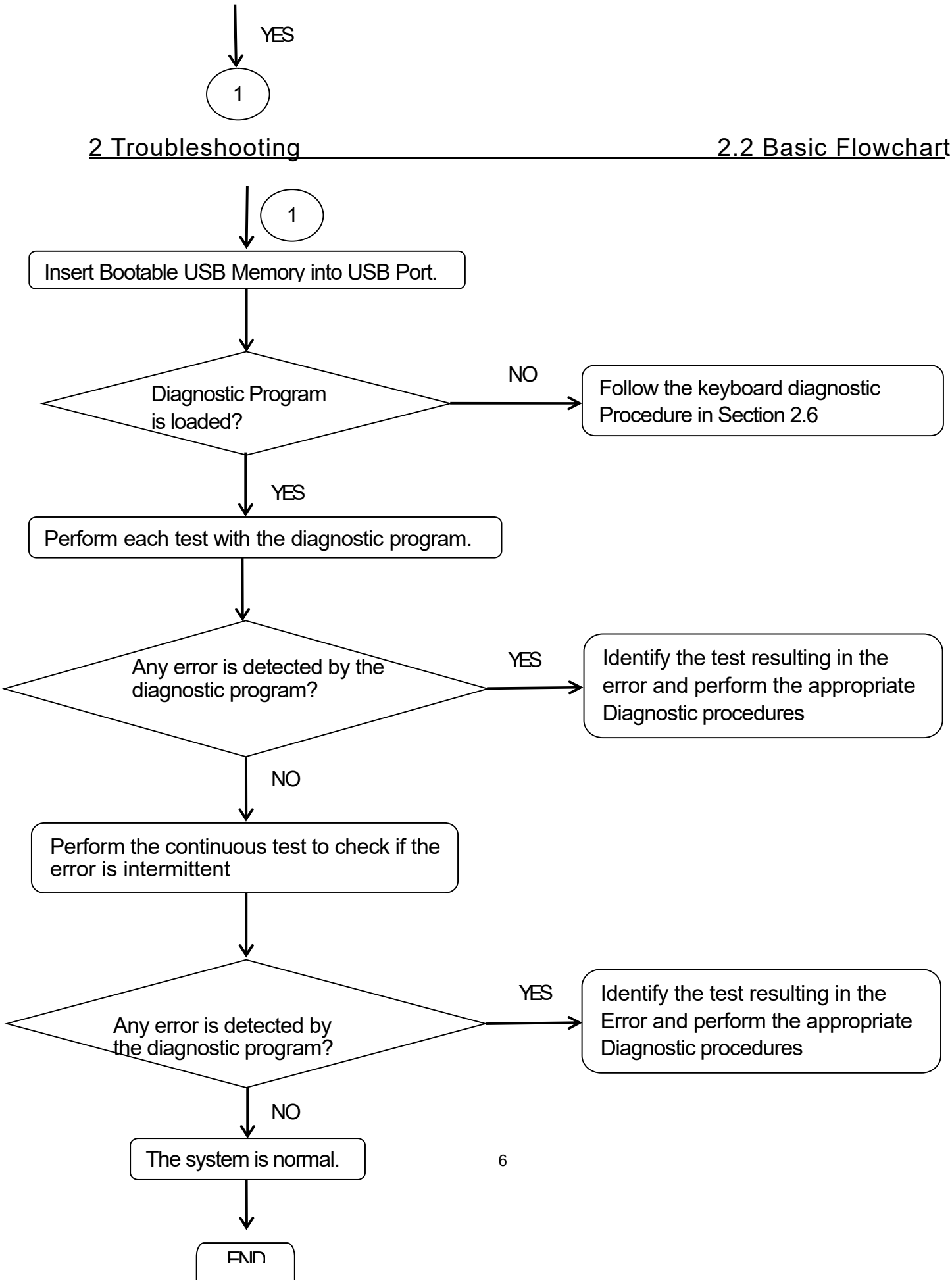
The basic flowchart in Figure 2-1 serves as a guide for identifying a possibly faulty FRU. Before going through the diagnostic flowchart steps, verify the following:

θ Ask the user if a password has been registered and, if so, ask him or her to enter the password. If the user has forgotten the system password, please follow below erase password process. The computer will overrides password protection and automatically erases the current password.

θ Make sure Windows® 10 has been installed on the HDD. Any other operating system can cause the computer to malfunction.

Flowchart


Start
Connect the ACAdapter
No
Follow the power supply Diagnostic Procedure in Section 2.3
YES
DCIN/Battery Charge LED is on?
No
Follow the system board diagnostic Procedure in Section 2.4
YES
Turn the power on
Any error message is displayed?
YES
Follow the display diagnostic Procedure in Section 2.6
NO
Message "dynabook" is displayed?
YES
See the previous page to Delete the password.
NO
OShas started?
NO
Follow the SSD diagnostic Procedure in Section 2.5
YES
Keyboard works well?
NO
Follow the keyboard diagnostic Procedure in Section 2.6


YES
1
1
Insert Bootable USB Memory into USB Port.
Diagnostic Program is loaded?
NO
Follow the keyboard diagnostic Procedure in Section 2.6
YES
Perform each test with the diagnostic program.
Any error is detected by the diagnostic program?
YES
Identify the test resulting in the error and perform the appropriate Diagnostic procedures
NO
Perform the continuous test to check if the error is intermittent
Any error is detected by the diagnostic program?
YES
Identify the test resulting in the Error and perform the appropriate Diagnostic procedures
NO
The system is normal.
END

2 Troubleshooting 2.2 Basic Flowchart

If diagnostic program cannot detect an error, the error may be intermittent. Run continuous test program repeatedly to isolate problem. Check log utility function to confirm which diagnostic test detects error, and perform appropriate troubleshooting procedures as below:

1. If an error is detected by CPU Test, follow the system board troubleshooting procedures in Section 2.4.
2. If an error is detected by Keyboard Test, follow the keyboard troubleshooting procedures in Section 2.5.
4. If an error is detected by Display Test, follow the display troubleshooting procedures in Section 2.7.
5. If an error is detected by Memory Test, follow the memory troubleshooting procedures in Section 2.8.
6. If an error is detected by SSD Test, follow the SSD troubleshooting procedures in section 2.9
7. If Audio error is detected by Windows application, please follow the audio troubleshooting procedures in Section 2.10.
8. If Touchpad error is detected by Windows application, please follow the touchpad troubleshooting procedures in Section 2.11.
9. If USB error is detected by Windows application, please follow the USB port troubleshooting procedures in Section 2.12.
10. If Headphone error is detected by Windows application, please follow the headphone port troubleshooting procedures in Section 2.13.
11. If Microphone error is detected by Windows application, please follow the microphone troubleshooting procedures in Section 2.14.
12. If HDMI error is detected by Windows application, please follow the HDMI port troubleshooting procedures in Section 2.16.
13. If TF Card error is detected by Windows application, please follow the TF Card Port troubleshooting procedures in Section 2.17.
14. If Camera error is detected by Windows application, please follow the Camera troubleshooting procedures in Section 2.18.
15. If Wireless LAN error is detected by Windows application, please follow the Wireless LAN troubleshooting procedures in Section 2.19.
16. If Battery error is detected by Windows application, please follow the Battery troubleshooting procedures in Section 2.20.
17. If Bluetooth error is detected by Windows application, please follow the Bluetooth troubleshooting procedures in section 2.22.
18. If LAN Port error is detected by Windows application, follow the LAN Port troubleshooting procedures in section 2.23

2.3 Power Supply

The power supply in the computer controls many functions and components. To check if the power supply is defective or malfunctioning, follow the troubleshooting procedures below as instructed.

Procedure 1 Power Icon Check Procedure 2 Connection Check Procedure 3 Replacement Check

Procedure 1 Power Icon Check

The following power LED indicates the power supply status:

θ DC IN/Battery Charge LED

The power supply controller displays the power supply status through the DCIN/Battery Charge LED as in the table below.

θ DC IN/Battery Charge LED

DC IN/Battery Charge LED

Power Supply Status

DC IN/Battery Charge LED DC IN/Battery Charge LED

On in Whi te	On in Whi te
Both DC Power is been supplying fr om AC Adapt er and	Both DC Power is been supplying fr om AC Adapt er and
Battery i s f ul ly Charged.	Battery i s f ul ly Charged.
On in Amber	On in Amber

If the DC IN/Battery Charge LED is off,follow the steps below :

1. Remove the battery pack and the AC adapter to shut off power supply to the computer. Shut down the computer. Next, remove the AC adapter. Then disassemble the computer and replace the battery. Next, assemble to check the battery.
2. Attach the battery and AC adapter back again.

If the DC IN/Battery Charge LED is stilloff,follow s the steps below:

Check 1

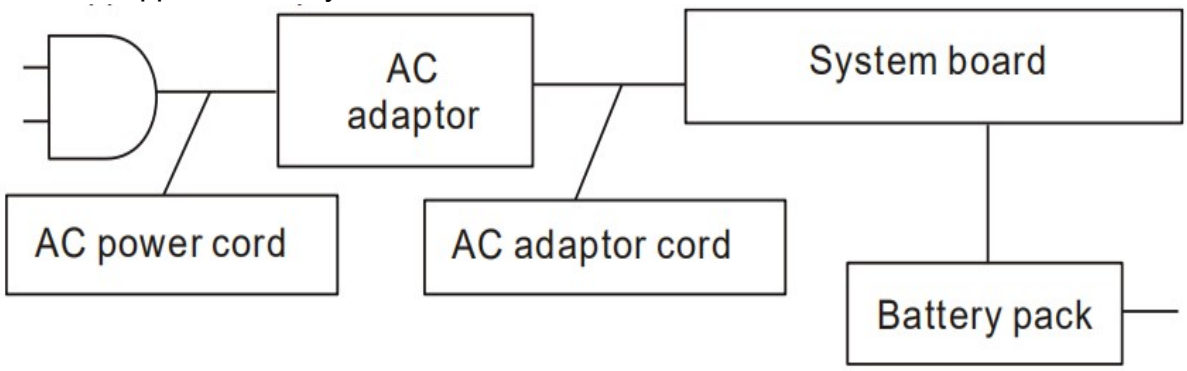
Make sure the DC IN/Battery Charge LED goes on in White or Amber. If it does not, go to Procedure 2.

Check 2

Make sure the DC IN/Battery Charge LED goes on in White or Amber again.If it does not, go to Procedure 3.

Procedure 2 Connection Check

Power is supplied to the system board as illustrated below:



Follow the steps below to check whether each connector has been connected correctly:

Check 1

Make sure the ACadaptor and ACpower cord have been firmly plugged into the DCIN socket and wall outlet, respectively. When they have been connected correctly, perform Check 2.

Check 2

Connect a new ACadaptor and ACpower cord.

Check 3

Make sure the battery pack has been correctly installed in the computer. If the LED does not go on while the battery pack has been installed correctly, go to Procedure 3.

Procedure 3 Replacement Check

The system board may be faulty. Disassemble the computer according to Chapter 4 and follow the steps below:

Check 1

Replace the system board with a new one.

2.4 System Board

To check if the system board is defective or malfunctioning, follow the troubleshooting procedures below as instructed.

Procedure 1 Message Check
Procedure 2 Test Program Check
Procedure 3 Replacement Check

Procedure 1 Message Check

When the power is turned on, the system performs the self-diagnostic Power On Self Test (POST) embedded in the BIOSROM. The POST tests and initializes each IC on the system board.

- If an error message appears on the display, perform Check 1.
- If there is no error message, go to Procedure 2.
- If Window 10 is loaded normally, go to Procedure 3.

Procedure 2 Test Program Check

The maintenance test program contains several programs for diagnosing the system board and CPU. Execute the following test programs using the procedures described in Chapter 3.

1. System Information Test
2. CPU Test
3. Memory Test
4. Video Test
5. Keyboard test
6. LED Test
7. FAN Test
8. DMI Read/Write Test
9. SSD Test

If an error is detected during these tests, go to Procedure 3.

Procedure 3 Replacement Check

The system board or memory may be defective. Disassemble the computer following the steps described in Chapter 4 and replace the system board, memory module with a new one.

2.5 Keyboard

To check if the computer's keyboard is defective or malfunctioning, follow troubleshooting procedures below as instructed.

Procedure 1 Test Program Check

Procedure 2 Connector Check and Replacement Check

Procedure 1 Test Program Check

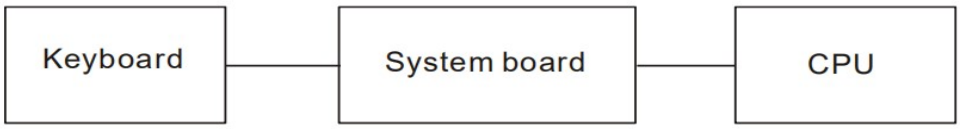
Execute the Keyboard test available as part of the maintenance test program. See Chapter 3 for information on how to perform the test. Some Keyboard have support Illumination (Backlit) function, check this function during Keyboard test when press any key. If an error is detected in the test, go to Procedure 2. If no error is detected, the keyboard itself is normal.

Procedure 2 Connector Check and Replacement Check

The keyboard or system board may be disconnected or faulty. Disassemble the computer following the steps described in Chapter 4 and perform the following checks:

Check 1

Make sure the keyboard cable has been firm ly connected to the system board.



If the cable is loose or off,reconnect it firm ly and return to Procedure 1. If there is stillan error,perform Check 2.

Check 2

The keyboard m ay be faulty.Replace it w ith a new one follow ing the instructions in Chapter 4. If the problem persists,perform Check 3.

Check 3

The System board m ay be faulty.Replace it w ith a new one follow ing the instructions in Chapter 4.If the keyboard is stillnot functioning properly,perform Check 4.

Check 4

The memory may be defective.Replace the memory module with a new one following the steps described in Chapter 4.

2.6 Display

To check if the computer’s display is defective or malfunctioning, follow the troubleshooting procedures below as instructed.
Procedure 1 External Monitor Check (Monitor with HDMI terminal)
Procedure 2 Test Program Check
Procedure 3 Connector Check and Replacement Check

Procedure 1 External Monitor Check

Connect an external monitor to the computer's external monitor port, then boot the computer. The computer automatically detects the external monitor even if resume mode is enabled.
If the external monitor works correctly, the internal LCD, or LCD cable may be faulty. Go to Procedure 3.
If the external monitor appears to have the same problem as the internal monitor, the system board may be faulty. Go to Procedure 2.

Procedure 2 Test Program Check

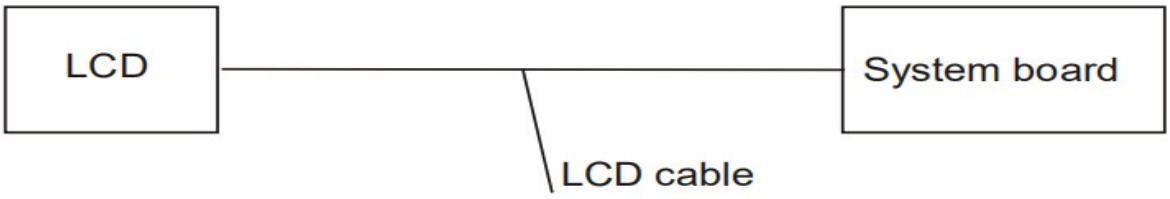
Insert the diagnostics USB Memory into the computer's USB Port, turn on the computer and run the test. See Chapter 3 for information on how to perform the test.
If an error is detected in the test, go to Procedure 3. If no error is detected, the display itself is normal.

Procedure 3 Connector Check and Replacement Check

The display unit has an LCD module, LED Backlight module, panel close switch. Any of the components or their connections may be defective. Disassemble the computer following steps described in Chapter 4, and then perform the following checks:
(1) If the FL does not light, perform Check 1.
(2) If characters or graphics are not displayed normally, perform Check 5.
(3) If the FL remains lit when the display is closed, the panel close switch may be defective. Perform Check 8.

Check 1

Make sure the following cables have been firmly connected to the system board.



If any of the cables is loose or off,reconnect it firm ly and return to Procedure 3. If there is still an error,perform Check 2.

Check 2

The LCD cable m ay be faulty.Replace it w ith a new one and return to Procedure 3.If there is still an error,perform Check 3.

Check 3

Make sure the LCD cable has been firmly connected to the system board and LCD m odule, if the cable is loose or off,reconnect it firm ly and return to Procedure 3.If there is stillan error, perform Check 4.

Check 4

The LCD m odule m ay be faulty.Replace it w ith a new one and return to Procedure 3.
If there is stillan error,perform Check 5.

Check 5

The System board m ay be faulty.Replace it w ith a new one.If there is stillan error, perform Check 6.

Check 6

The m em ory m ay be defective.Replace the m em ory m odule with a new one follow ing the steps described in Chapter 4.

2.7 Memory

To check if the computer's Memory Module is defective or malfunctioning, follow the troubleshooting procedures below as instructed.
Procedure 1 Test Program Check
Procedure 2 Connector Check and Replacement Check

Procedure 1 Test Program Check

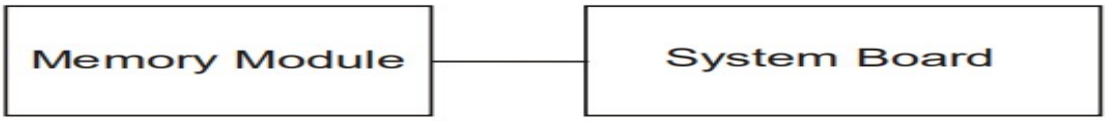
Execute Memory Test Program available as part of the maintenance test program. This test program checks the memory module. Insert the diagnostics USB Memory into the computer's USB Port, turn on the computer and run the test. See Chapter 3 for information on how to perform the test. If any error is detected by the test, go to Procedure 2. If no error is detected, Memory Module is functioning properly.

Procedure 2 Connector Check and Replacement Check

The memory module is connected to the system board. If the memory module malfunctions, there may be a bad connection between Memory Module and System Board, or either might be faulty. Disassemble the computer following the steps described in Chapter 4 and perform the following checks:

Check 1

Make sure Mem ory Module has been firm ly connected to the connector on System Board.Also m ake sure the tape is notstuck to any partofMemory Module and M em ory Module
is free of foreign m atters.



And if connector is disconnected, connect it firmly to system board & return to Procedure 1. If

the tape is stuck to any part of memory, stick it back to the specified point and if a foreign matter is found on memory, remove it and then return to Procedure 1. If there is still an error, perform Check 2.

Check 2

Memory Module m ay be faulty.Replace it w ith a new one follow ing the steps described in Chapter 4.If Mem ory Module replaced is stillnot functioning properly,perform Check 3.

Check 3

System Board m ay be defective.Replace System Board w ith new one follow ing steps described in Chapter 4.

2.9 SSD (Solid-state Drive)

To check if the SSD is defective or malfunctioning, follow the troubleshooting procedures below as instructed.
Procedure 1 Test Program Check
Procedure 2 Connector Check and Replacement Check

CAUTION: The contents of the SSD will be erased when the SSD diagnostic test or formatting is executed. Save the required contents of the SSD to other storage drive in advance.

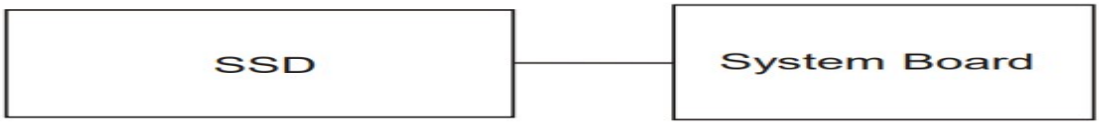
Run the storage test program stored on the maintenance test program disk for all test items. See Chapter 3 for details on how to use the test program. If an error is detected during the SSD test, go to Procedure 2.

Procedure 2 Connector Check and Replacem ent Check

The SSD or system board may be faulty. Disassemble the computer following the steps described in Chapter 4 and perform the following checks s:

Check 1

Make sure the follow ing connectors have been firm ly connected to the SSD and system board.



If any connector is loose or off,reconnect it firm ly and return to Procedure 1.
If there is stillan error,perform Check 2.

Check 2

The SSD m ay be faulty.Replace it w ith a new one following the instructions in Chapter 4.If the problem persists,perform Check 3.

Check 3

The System board m ay be faulty.Replace it w ith a new one follow ing the instructions in Chapter 4.

2.9 Audio Test

To check if the computer's Speaker is defective or malfunctioning, follow troubleshooting procedures below as instructed.
Procedure 1 Windows Application Test
Procedure 2 Connector Check and Replacement Check

Procedure 1 Windows Application Test

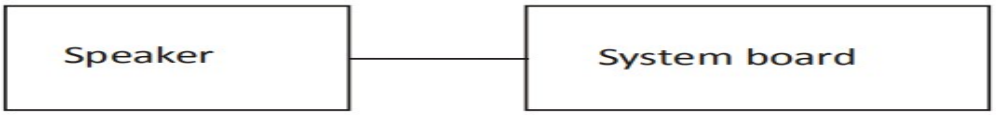
Speakers are connected to System Board through cable. Please power on the computer into Windows. The computer will automatically detect these speakers.
If an error is detected in the test, go to Procedure 2. If no error is detected, the Audio itself is normal.

Procedure 2 Connector Check and Replacement Check

The Audio or system board may be disconnected or faulty. Disassemble the computer following the steps described in Chapter 4 and perform the following checks:

Check 1

Make sure the Speaker cable has been firm ly connected to the system board.



f there is stillan error, perform Check 2.

Check 2

The Speaker m ay be faulty.Replace it w ith a new one following the instructions in Chapter 4.If the problem persists,perform Check 3.

Check 3

The System board m ay be faulty.Replace it w ith a new one follow ing the instructions in Chapter 4.If the Audio is stillnot functioning properly,perform Check 4.

Check 4

The m em ory m ay be defective.Replace the m em ory m odule with a new one follow ing the steps described in Chapter 4.

2.10Touchpad

The computer supports touch pad.Check your computer's touch pad If afault occurs ,follow the instructions below to execute the troubleshooting procedure.
Procedure 1 Windows Application Test
Procedure 2 Connector Check and Replacement Check

Procedure 1 Windows Application Test

Please power on the computer into Windows. The computer will automatically detect this touchpad device. If the touchpad device appears to have a certain problem, go to Procedure 2.

Procedure 2 Connector Check and Replacement Check

Touchpad Module is connected to the system board through FFCCable. If the touch fails, there could be a problem with the module or the system board.Disassemble the computer following the steps described in Chapter 4 and perform the following checks:

Check 1

Make sure Touchpad has been firm ly connected to the connector on System Board.Also m ake sure the tape is not stuck to any part of Touchpad Module is free of foreign m atters.

And if connector is disconnected, connect it firmly to system board & return to Procedure 1.

If the tape is stuck to any part of Touchpad , stick it back to the specified point and if a foreign matter is found on Touchpad, remove it and then return to Procedure 1. If there is still an error, perform Check 2.

Check 2

Touchpad m ay be faulty.Replace it w ith a new one follow ing the steps described in Chapter 4.If Touchpad replaced is stillnot functioning properly,perform Check 3.

Check 3

System Board m ay be defective.Replace System Board w ith new one follow ing steps described in Chapter 4.

2.11 USB Port

To determine if the computer's USB Port is functioning properly or malfunctions, perform following procedures. Start with Procedure 1 and continue with the other procedure as instruction below.
Procedure 1 Windows Application Test
Procedure 2 Connector Check and Replacement Check

Procedure 1 Windows Application Test

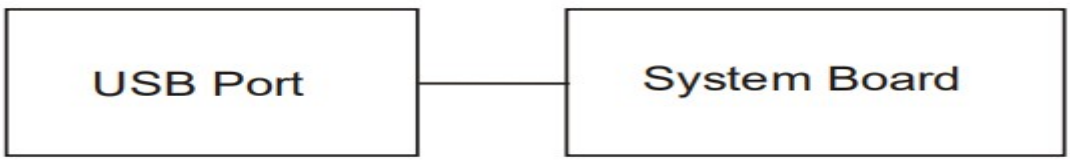
The USB Port Connector is mounted on System Board. Connect a USB device with USinterface to the computer's USB port, then power on the computer into Windows. The computer will automatically detect this USB device through USB Port. Some SKU have support USB3.0 port with Sleep & Charge function. Check this function by USB device charge when system suspend mode. If the USB device appears to have a certain problem, go to Procedure 2. If an error is not located, USB Port is functioning properly.

Procedure 2 Connector Check and Replacement Check

If USB Port on System Board malfunctions, there may be a bad connection between USB device and System Board, or either of System Board might be faulty. Disassemble the computer following the steps described in Chapter 4 and perform the following checks:

Check 1

Make sure USB device cable has been firm ly connected to USB Port ofSystem Board.Also m ake sure USB Port on System Board is free of foreign m atters.



And if the connector is disconnected, connect it firmly to the system board and return to Procedure 1. If a foreign matter is found on USB Port of System Board, remove it and then return to Procedure 1. If the problem persists, perform Check 2.

Check 2

System Board may be faulty.Replace it with a new one following the steps described in Chapter 4.

2.12 Headphone Port

To determine if the computer's Headphone Port is functioning properly or malfunctions, perform following procedures. Start with Procedure 1 and continue with the other procedure as instruction below.
Procedure 1 Windows Application Test
Procedure 2 Connector Check and Replacement Check

Procedure 1 Windows Application Test

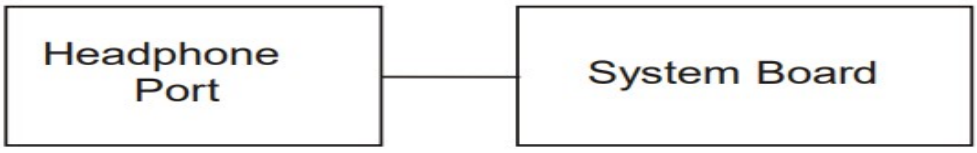
Headphone Port Connector is mounted on System Board. Connect external Headphone with Headphone Jack interface to the computer's Headphone Port, then power on the computer into Windows. The computer will automatically detect this Headphone device through Headphone Port. Execute Function Programs in Windows, if the Headphone device appears to have a certain problem, go to Procedure 2. If an error is not located, Headphone Port is functioning properly.

Procedure 2 Connector Check and Replacement Check

If Headphone Port on System Board malfunctions, there may be a bad connection between Headphone device and System Board, or either of System Board might be faulty. Disassemble the computer following the steps described in Chapter 4 and perform the following checks:

Check 1

Make sure Headphone device cable has been firmly connected to Headphone Port ofSystem Board.Also make sure Headphone Port on System Board is free offoreign matters.



And if the connector is disconnected, connect it firmly to the system board and return to Procedure 1. If a foreign matter is found on Headphone Port of System Board, remove it and then return to Procedure 1. If the problem persists, perform Check 2.

Check 2

System Board m ay be faulty.Replace it w ith a new one following the steps described in Chapter 4.

2.13 Microphone Port

To determine if the computer's Microphone Port is functioning properly or malfunctions, perform following procedures. Start with Procedure 1 and continue with the other procedure as instruction below.
Procedure 1 Windows Application Test
Procedure 2 Connector Check and Replacement Check

Procedure 1 Windows Application Test

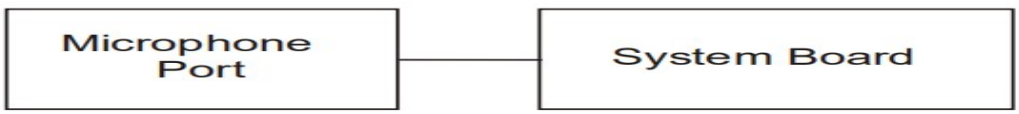
Microphone Port Connector is mounted on System Board. Connect external Microphone with Microphone Jack interface to the computer's Microphone Port, then power on the computer into Windows. The computer will automatically detect this Microphone device through Microphone Port. Execute Function Programs in Windows, if the Microphone device appears to have a certain problem, go to Procedure 2. If an error is not located, Microphone Port is functioning properly.

Procedure 2 Connector Check and Replacement Check

If Microphone Port on System Board malfunctions, there may be a bad connection between Microphone device and System Board, or either of System Board might be faulty. Disassemble the computer following the steps described in Chapter 4 and perform the following checks:

Check 1

Make sure Microphone device cable has been firm ly connected to Microphone Port ofSystem Board.Also m ake sure Microphone Port on System Board is free offoreign m atters.



And if the connector is disconnected, connect it firmly to the system board and return to Procedure 1. If a foreign matter is found on Microphone Port of System Board, remove it and then return to Procedure 1. If the problem persists, perform Check 2.

Check 2

System Board m ay be faulty.Replace it w ith a new one following the steps described in Chapter 4.

2.14 HDMI Port

To determine if the computer's HDMI Port is functioning properly or malfunctions, perform following procedures. Start with Procedure 1 and continue with the other procedure as instruction below.
Procedure 1 Windows Application Test
Procedure 2 Connector Check and Replacement Check

Procedure 1 Windows Application Test

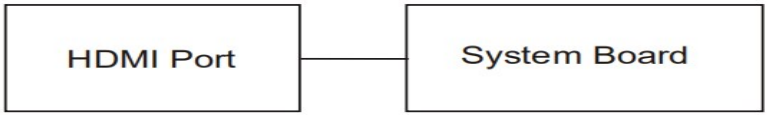
The HDMI Port Connector is mounted on System Board. Connect an external monitor with HDMI interface to the computer's HDMI port, then power on the computer into Windows. The computer will automatically detect this external monitor through HDMI Port. If the external monitor appears to have a certain problem, go to Procedure 2. If an error is not located, HDMI Port is functioning properly.

Procedure 2 Connector Check and Replacement Check

If HDMI Port on System Board malfunctions, there may be a bad connection between External Monitor and System Board. Or System Board might be faulty. Disassemble the computer following the steps described in Chapter 4 and perform the following checks:

Check 1

Make sure ExternalMonitor HDMICable has been firm ly connected to HDMIPort on System Board.Also m ake sure HDMIPort on System Board is free of foreign m atters.



And if the connector is disconnected, connect it firmly to the system board and return to Procedure 1. If a foreign matter is found on HDMI Port of System Board, remove it and then return to Procedure 1. If the problem persists, perform Check 2.

Check 2

System Board may be faulty.Replace it with a new one following the steps described in Chapter 4.

2.15 T -card Port

IO Board or System Board may be the reason of T-Card fault. Either of these two components may be damaged. To determine if the computer's IO Board is functioning properly, perform following procedures. Start with Procedure 1 and continue with the other procedure as instruction below.
Procedure 1 Windows Application Test
Procedure 2 Connector Check and Replacement Check

Procedure 1 Windows Application Test

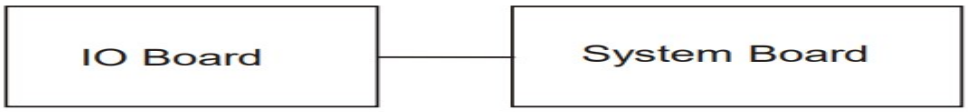
Put a T Card into T- Card Port, then power on the computer into Windows. The computer will automatically detect this T- Card through T Port. Execute Function Programs in Windows,if the T- Card is not functioning properly, go to Procedure 2. If an error is not located, The system is functioning properly.

Procedure 2 Connector Check and Replacement Check

IO Board is connected to System Board through FFCCable. If T- Card malfunctions, there maybe a bad connection between IO Board and System Board, or either of these two components might be faulty. Disassemble the computer following the steps described in Chapter 4 and perform the following checks:

Check 1

Make sure IO Board FFC Cable has been firmly connected to the connector on System Board. Also make sure IO Board is free of foreign matters.



And if the connector is disconnected, connect it firmly to the system board and return to Procedure 1. If a foreign matter is found on IO Board, remove it and then return to Procedure 1.
If the problem persists, perform Check 2.

Check 2

IO m ay be faulty.Replace it w ith a new one follow ing the steps described in Chapter 4.If IO Board replaced is stillnot functioning properly,perform Check 3.

Check 3

System Board m ay be defective.Replace System Board w ith a new one follow ing the steps described in Chapter 4.

2.16 Type -C Port

To determine if the computer's Type-c Port is functioning properly or malfunctions, perform following procedures.Start with Procedure 1 and continue with the other procedure as instruction below.
Procedure 1 Windows Application Test
Procedure 2 Connector Check and Replacement Check

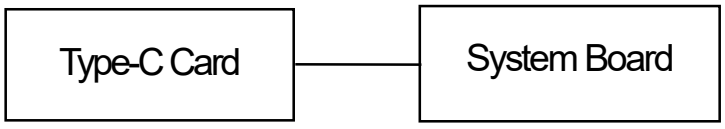
Procedure 1 Windows Application Test

Put a Type-Ccard into Type-CPort, then power on the computer into Windows. The computer will automatically detect this Type Card through Type-CCard Port. Execute Function Programs in Windows,if the Type-CCard is not functioning properly, go to Procedure 2. If an error is not located, The system is functioning properly.

Procedure 2 Connector Check and Replacement Check

Check 1

Make sure Type-C Cable has been firm ly connected to the connector on System Board.Also m ake sure Type-C Card is free of foreign m atters.



And if the connector is disconnected, connect it firmly to the system board and return to Procedure 1. If a foreign matter is found on type-CCard, remove it and then return to Procedure 1.If the problem persists, perform Check 2.

Check 2

Type-C Card m ay be faulty.Replace it w ith a new one following the steps described in Chapter 4. If Type-C Card replaced is stillnot functioning properly,perform Check 3.

Check 3

System Board m ay be defective.Replace System Board w ith a new one follow ing the steps described in Chapter 4.

2.17 Camera

Camera Module or System Board may be the reason of Camera fault. Either of these two components may be damaged. To determine if the computer's Camera is functioning properly, perform following procedures. Start with Procedure 1 and continue with the other procedure as instruction below.
Procedure 1 Windows Application Test
Procedure 2 Connector Check and Replacement Check

Procedure 1 Windows Application Test

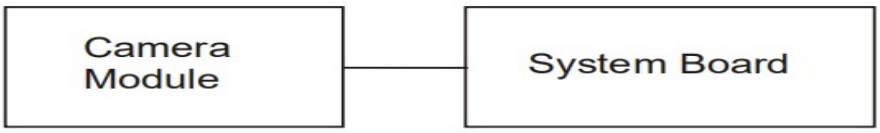
Execute Function Programs in Windows, LED of Camera Module should be turned on when Camera is working, if Camera Module is not functioning properly, go to Procedure 2. If an error is not located, Camera system is functioning properly.

Procedure 2 Connector Check and Replacement Check

Camera Module is connected to System Board through FPC Cable. If Camera malfunctions, there may be a bad connection between Camera Module and System Board, or either of these two components might be faulty. Disassemble the computer following the steps described in Chapter 4 and perform the following checks:

Check 1

Make sure Cam era Module FPC Cable has been firm ly connected to the connector on System Board.Also m ake sure Cam era Module is free offoreign m atters.



And if the connector is disconnected, connect it firmly to the system board and return to Procedure 1. If a foreign matter is found on Camera Module, remove it and then return to Procedure 1. If the problem persists, perform Check 2.

Check 2

Cam era Module m ay be faulty.Replace it w ith a new one follow ing the steps described in Chapter 4.If Cam era Module replaced is stillnot functioning properly,perform Check 3.

Check 3

System Board m ay be defective.Replace System Board w ith a new one follow ing the steps described in Chapter 4.

2.18 Wireless LAN

Wireless Module or system board may be the reason of Wireless LAN fault. Either of these two components may be damaged. To determine if the computer's Wireless LAN module is functioning properly, perform following procedures. Start with Procedure 1 and continue with the other procedures as instruction below.
Procedure 1 Windows Application Test
Procedure 2 Connector Check and Replacement Check

Procedure 1 Windows Application Test

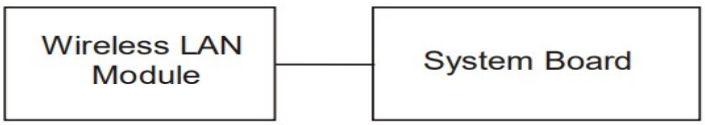
Place unit to location near wifi hotspot. Execute wifi applications in Windows, then active wireless connection. Check whether unit can normally connect to wifi hotspot. If connection is fail, go to Procedure 2. If error is not located, Wireless LAN system is functioning properly.

Procedure 2 Connector Check and Replacement Check

Wireless LAN Module is connected to the system board. If Wireless LAN malfunctions, there may be a bad connection between Wireless LAN Module and the system board, or either might be faulty. Disassemble the computer following the steps described in Chapter 4 and perform the following checks:

Check 1

Make sure W ireless LAN m odule has been firmly connected to the connector on the system board.Also m ake sure W ireless LAN m odule is free of foreign m atters.



And if the connector is disconnected, connect it firmly to the system board and return to Procedure 1. If a foreign matter is found on Wireless LAN Module, remove it and then return to Procedure 1. If there is still an error, perform Check 2.

Check 2

W ireless LAN M odule may be faulty.Replace it w ith a new one follow ing the steps described in Chapter 4.If Wireless LAN Module replaced is stillnot functioning properly,perform Check 3.

Check 3

System Board m ay be defective.Replace System Board w ith a new one follow ing the steps described in Chapter 4.

2.19 Battery Pack

Battery Pack or system board may be the reason of Battery fault. Either of these two components may be damaged. To determine if the computer’s Battery Pack is functioning properly, perform following procedures. Start with Procedure 1 and continue with the other procedures as instruction below.
Procedure 1 Windows Application Test
Procedure 2 Windows Application Test
Procedure 3 Connector Check and Replacement Check

Procedure 1 Windows Application discharge Test

Boot up unit from Battery only, make sure ACadaptor power cable doesn't connect to unit . If unit can't boot up after pressing power button, connect ACadaptor power cable to unit to charge battery.
After 10 mins, remove ACadaptor power cable then press power button. If unit can boot up after pressing power button, go to Procedure 2.
If it can not boot up, go to Procedure 3.

Procedure 2 Windows Application charge Test

Boot up unit from Battery only, make sure Battery is not full charged from system battery icon in window.

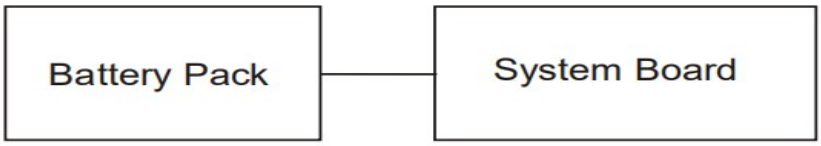
Record current Battery charged percentage value.
Connect ACadaptor power cable to unit to charge battery. After 10 mins, check system battery icon in window again.
If Battery charged percentage is not increased, go to Procedure 3.
If Battery charged percentage is increased or is full charged, Battery Pack is functioning properly.

Procedure 3 Connector Check and Replacement Check

Battery Pack is connected to the system board. If Battery Pack malfunctions, there may be a bad connection between Battery Pack and the system board, or either might be faulty. Disassemble the computer following the steps described in Chapter 4 and perform the following checks:

Check 1

Make sure Battery Pack has been firm ly connected to the connector on the system board.Also m ake sure Battery Pack is free of foreign m atters.



And if the connector is disconnected, connect it firmly to the system board and return to Procedure 1 or 2. If a foreign matter is found on Battery Pack, remove it and then return to Procedure 1 or 2. If there is still an error, perform Check 2.

Check 2

Battery Pack m ay be faulty.Replace it w ith a new one follow ing the steps described in Chapter 4. If Battery Pack replaced is stillnot functioning properly,perform Check 3.

Check 3

System Board m ay be defective.Replace System Board w ith a new one follow ing the steps described in Chapter 4.

2.20 Bluetooth

Bluetooth is combo module with Wireless LAN on this model. Bluetooth Module or system board may be the reason of Bluetooth fault. Either of these two components may be damaged. To determine if the computer's Bluetooth module is functioning properly, perform following procedures. Start with Procedure 1 and continue with the other procedures as instruction below.
Procedure 1 Windows Application Test
Procedure 2 Connector Check and Replacement Check

Procedure 1 Windows Application Test

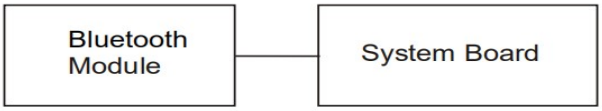
Place unit to location near Bluetooth device. Execute Bluetooth applications in Windows, then active Bluetooth connection. Check whether unit can normally connect to Bluetooth device. If connection is fail, go to Procedure 2. If error is not located, Bluetooth is functioning properly.

Procedure 2 Connector Check and Replacement Check

Bluetooth Module is connected to the system board. If Bluetooth malfunctions, there may be a bad connection between Bluetooth Module and the system board, or either might be faulty. Disassemble the computer following the steps described in Chapter 4 and perform the following checks:

Check 1

Make sure Bluetooth module has been firmly connected to the connector on the system board. Also m ake sure Bluetooth m odule is free of foreign m atters.



And if the connector is disconnected, connect it firmly to the system board and return to Procedure 1. If a foreign matter is found on Bluetooth Module, remove it and then return to Procedure 1. If there is still an error, perform Check 2.

Check 2

Bluetooth M odule m ay be faulty.Replace it with a new one following the steps described in Chapter 4.If Bluetooth Module replaced is stillnot functioning properly,perform Check 3.

Check 3

System Board m ay be defective.Replace System Board w ith a new one follow ing the steps described in Chapter 4.

2.21 LAN Port

To determine if the computer's LAN Port is functioning properly or malfunctions, perform following procedures. Start with Procedure 1 and continue with the other procedure as instruction below.
Procedure 1 Windows Application Test
Procedure 2 Connector Check and Replacement Check

Procedure 1 Windows Application Test

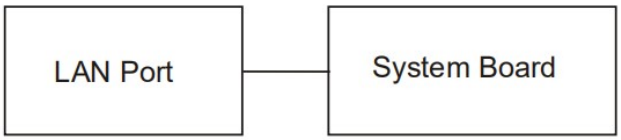
The LAN Port Connector is mounted on System Board. Connect an LAN Cable with Internet interface to the computer's LAN port, then power on the computer into Windows. Execute Function Programs in Windows, which will display the LAN Test Result. If the test and diagnostics result is abnormal, go to Procedure 2. If an error is not located, LAN system is functioning properly.

Procedure 2 Connector Check and Replacement Check

If LAN Port on System Board malfunctions, there may be a bad connection between LAN Cable and System Board. Or System Board might be faulty. Disassemble the computer following the steps described in Chapter 4 and perform the following checks:

Check 1

Make sure LAN Cable has been firm ly connected to LAN Port on System Board.Also m ake sure LAN Port on System Board is free of foreign m atters.



And if the connector is disconnected, connect it firmly to the system board and return to Procedure 1. If a foreign matter is found on LAN Port on System Board, remove it and then return to Procedure 1. If the problem persists, perform Check 2.

Check 2

System Board may be faulty. Replace it with a new one following the steps described in Chapter 4.

2.22 Fingerprint

The computer supports fingerprint.Check your computer's fingerprint If afault occurs ,follow the instructions below to execute the troubleshooting procedure.
Procedure 1 Windows Application Test
Procedure 2 Connector Check and Replacement Check

Procedure 1 Windows Application Test

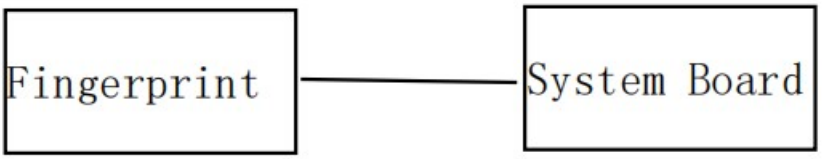
Please power on the computer into Windows. The computer will automatically detect this fingerprint device. If the fingerprint device appears to have a certain problem, go to Procedure 2.

Procedure 2 Connector Check and Replacement Check

Fingerprint Module is connected to the system board through FFCCable. If the touch fails, there could be a problem with the module or the system board.Disassemble the computer following the steps described in Chapter 4 and perform the following checks:

Check 1

Make sure fingerprint has been firm ly connected to the connector on System Board.Also m ake sure the tape is not stuck to any part of fingerprint Module is free of foreign m atters.



And if connector is disconnected, connect it firmly to system board & return to Procedure 1. If the tape is stuck to any part of fingerprint , stick it back to the specified point and if a foreign matter is found on fingerprint, remove it and then return to Procedure 1. If there is still an error, perform Check 2.

Check 2

fingerprint may be faulty. Replace it with a new one following the steps described in Chapter 4. If fingerprint replaced is still not functioning properly, perform Check 3.

Check 3

System Board may be defective. Replace System Board with new one following steps described in Chapter 4.

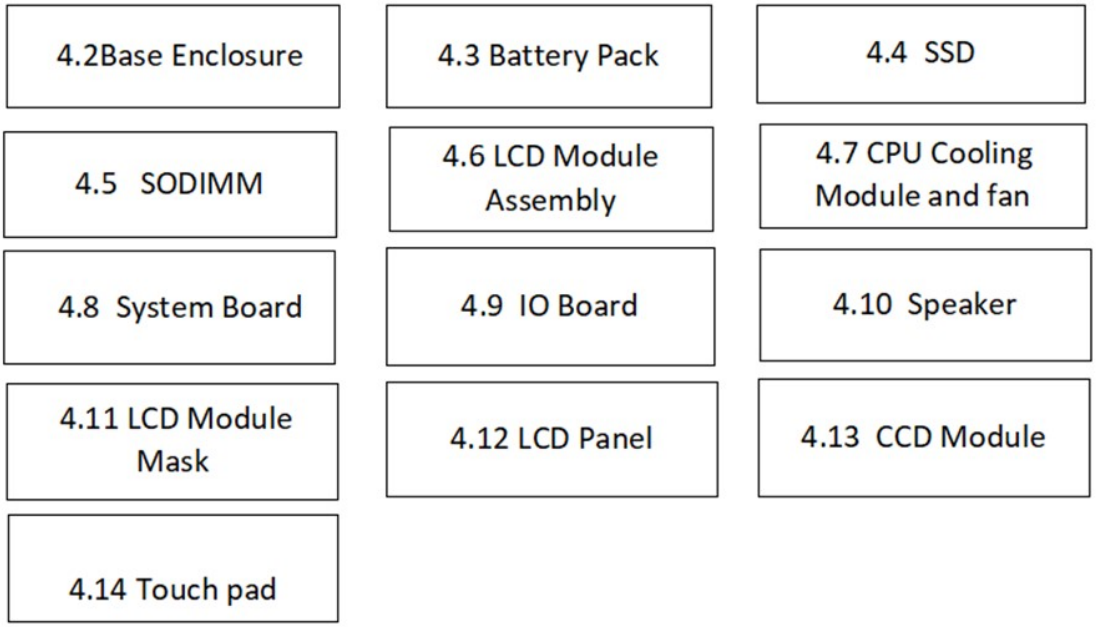
Chapter 4
Replacement Procedures

Chapter 4 Contents

Figures

4.1 General

This chapter explains how to disassemble the computer and replace Field Replaceable Units (FRUs). Some replacement procedures may not require you to remove all the surrounding FRUs to replace only one FRU. The chart below shows the FRUs in the order in which they should be removed in a top-down manner, irrespective of their physical locations. The FRUs shown in the top area of the chart should normally be removed before removing the FRUs shown in the bottom area. To replace the FRUs, first identify the suspect FRU for the system failure. Next, according to this chart, determine the FRUs that need to be removed before removing the suspect FRU. After you determine those FRUs, go to the appropriate sections according to the section numbers shown in the boxes. Then start removal and replacement.



How to use the chart (two examples):

•For removing the System Board:

First, remove Base Enclosure, Battery Pack and display assembly. Then, remove SSD, and all cable, all of which are shown above the System Board.

•For removing the LCD Module:

First, remove the display mask, both of which are shown above the LCD module.

Safety Precautions

Before you begin to disassembly read the following safety precautions carefully. Be sure to follow them while you are working.

D ANG ER:

1. Always use the genuine batteries or replacem ent batteries authorized by Toshiba. Batteries other than those differ in specifications and are incom patible with the com puter.They m ay burstor explode.To avoid leakage of alkaline solutions, never heat or disassem ble the battery packs.N ever throw the battery packs into a fire. If this is violated, they will explode.
2. The com ponents such as the power supply and FL inverter carry high voltages. When you partially disassem ble the computer and turn on the com ponents,use extrem e care notto touch the connectors and com ponents to avoid the risk of electrical shock.D o not disassem ble individual com ponents during first-level maintenance.

W ARN IN G:

1. To avoid the risk of electrical shock,turn the com puter off and rem ove the AC adapter from the electrical outlet.
2. Because the battery in the com puter is left charged, the risk of electrical shock rem ains even after the AC adapter is rem oved from the electrical outlet.To avoid the risk of electrical shock,be sure to remove any m etal jewelry or accessories such as necklaces,bracelets,and rings before starting work.N ever work with dam p or wethands.
3. To avoid personal injury,use care to avoid the sharp edges or corners of the com ponents.

CAU TIO N :

1. Before replacing a com ponent,m ake sure that the replacem ent com ponent m eets the required specifications.To avoid computer failures,never use components that do not m eet the specifications.
2. To avoid internal dam age such as shortcircuits and fire,never drop m etal objects such as screws,pins,paper clips,etc.into the com ponents.When a screw is rem oved,be sure to replace a screw that is the sam e size as the original screw. Make sure thatall the screws are fastened securely.Loose screws can cause short circuits, overheating, sm oke, or fire.
3. Before raising a FRU or other com ponent,m ake sure thatallthe com ponent cables have been disconnected to avoid the risk of electrical shock caused by accidental contact with the energized com ponents.
4. For AC input,be sure to use the AC adapter and AC power cable thatcom e with your com puter or Toshiba-recom m ended equivalents.
5. To avoid the risk of electrical shock,m ake sure that all the replacement com ponents m eet the specifications of the com puter and thatall the cables and connectors are fastened securely.
6. Inside the PC are com ponents that becom e hotduring operation (such as the CPU and cooling m odule).To avoid burns,letthe hotcom ponents cooldown before starting inspection or repair task.

Before You BeginBefore

Before you begin to disassembly the computer, keep in mind the precautions and advice in this section. Always begin disassembly by removing the AC adapter and battery pack. Remove the optional parts and accessories as well. The procedures for removing the batteries will be explained later.

Disassemble the computer only when an abnormality has occurred.

Use only the recommended tools.

To run and store the computer, be sure to prepare a working environment that is free from:

- θ Dust and contaminants
- θ Static electricity
- θ Extremely high or low temperatures and extremely high humidity

Run the diagnostic tests explained in Chapter 3 of this manual to identify the FRU that has probably caused the system failure.

Perform only the required machine operations. Use only the disassembly and reinstallation procedures described in this manual.

Place the removed components in a safe place away from the computer so that they are not damaged or get in the way of you doing your work.

Normally, a number of screws need to be removed or replaced during disassembling. Place the removed screws in a safe place so that you can easily find the right screws for the right components.

When assembling the computer, use the specified screws to fasten the parts to the specified locations. See the appropriate explanations and figures for screw sizes.

To avoid personal injury, use care to handle components that have sharp edges or corners.

After you have replaced a FRU, check that the FRU works correctly to ensure normal computer operation.

Disassembly Procedures

The cable connectors come in these two basic types:

- θ Pressure plate connectors
- θ Normal pin connectors

To remove a pressure plate connector, pull up the tabs on either side of the connector's plastic pressure plate and gently pull the cable out of the connector. To reconnect the cable to the pressure plate's connector, raise the pressure plate up to a satisfactory height and slide the cable into the connector. Secure the cable in the correct position by pressing down the sides of the pressure plate so that the plate is flush with the sides of the connector. Grasp and pull the cable gently to check that the cable is connected firmly. If the cable comes off the connector, reinsert the cable by raising the pressure plate up to a satisfactory height.

Normal pin connectors are used for all the other types of cables. These connectors can be installed or removed by simply inserting them or pulling them out.

Assembly Procedures

You have to reassemble the computer after you have disassembled the computer and fixed the component that caused the problem.

When reassembling the computer, keep the following general guidelines in mind:

- θ Take your time to carry out the suggested instructions completely. Hurried reassembly can often cause problems.
- θ Check that all the cable and connectors are fastened securely.
- θ Before securing the FRUs or other parts, check that the cables are not caught by the screws or FRUs.
- θ Check that all the latches are closed securely.
- θ Check that all the required screws are used to secure the FRUs. Using wrong screws can damage the threads or heads of the screws or does not ensure that the FRUs are secure.

After installing a FRU, make sure that the FRU and computer work normally.

Tools and Equipment

For your safety and that of other people in the working environment, it is strongly recommended that you use electrostatic discharge (ESD) equipment. The proper use of this equipment will ensure successful repair work and reduce the costs for repairing damaged components. The equipment and tools required for disassembly and reassembly are:

- θ One 2 mm Phillips screwdriver
- θ Tweezers (for pulling out screws)
- θ ESD mats (for the floor and work desks)
- θ An ESD wrist strap or heel grounder
- θ Anti-static carpets or flooring
- θ Air ionizers (for highly electrostatic sensitive areas)
- θ A plastic card (in credit card size)

Screw Tightening Torque

To secure screws, follow the torque values listed below. Over tightening can damage components and screws. Under tightening can loosen the screw or cause screws to come off, which may result in short circuits or other damage.

- θ M2.0*L3.0*D7.5*T0.5 0.36 N·m (2.0 kgf·cm)
- θ M2.0*L3.0*D4.5*T0.5 0.22 N·m (1.5 kgf·cm)
- θ M2.0*L2.5*D5.0*T0.5 0.22 N·m (1.5 kgf·cm)
- θ M2.0*L3.5*D4.5*T0.5 0.36 N·m (2.0 kgf·cm)
- θ M2.0*L5.5*D4.5*T0.5 0.36 N·m (2.0 kgf·cm)
- θ M2.0*L7.0*D4.5*T0.5 0.36 N·m (2.0 kgf·cm)

4.2 Base Enclosure

Removing Base Enclosure

Remove Base Enclosure according to the following procedures and Figure 4-7.

1. Remove seven M2.0x7.0x4.5black Phillips head screws securing Base Enclosure and four M2.0x.3.5x4.5black Phillips head screws securing Base Enclosure .

2. Remove Base Enclosure..

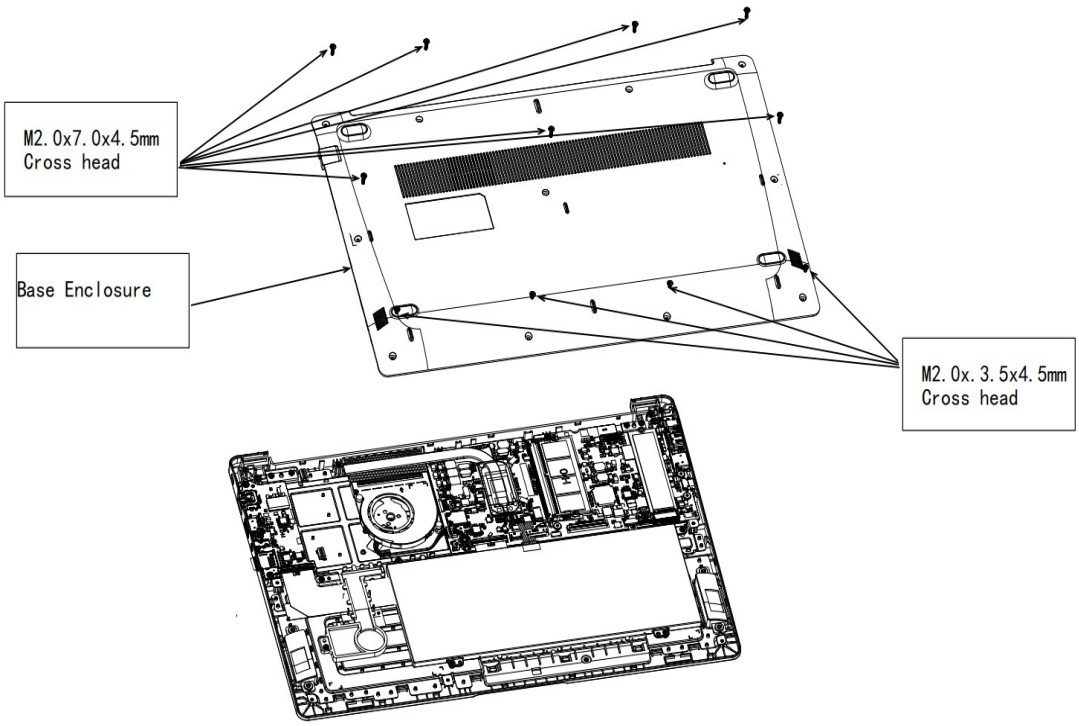


Figure 4-7 Removing Base Enclosure

Installing Base Enclosure

Install Base Enclosure according to the following procedures and Figure 4-7.

1. Place Base Enclosure in correct position.
2. Secure Base Enclosure with seven M2.0x7.0x4.5black Phillips head screws and M2.0x3.5x4.5black Phillips head screws .

4.3 Battery Pack

Removing Battery Pack

Remove battery pack according to the following procedures and Figure 4-9.

CAU TIO N : W hen handling the battery packs,use care not to shortcircuit the term inals.D o not drop,hit,twist,or bend the battery packs.D o not scratch or break up their casing.

1. Remove Battery Maly.
2. Disconnect Battery cable from CN3 on system board.
3. Remove four M2.0x3.0x4.5 black Phillips head screws securing Battery.
4. Remove Battery.

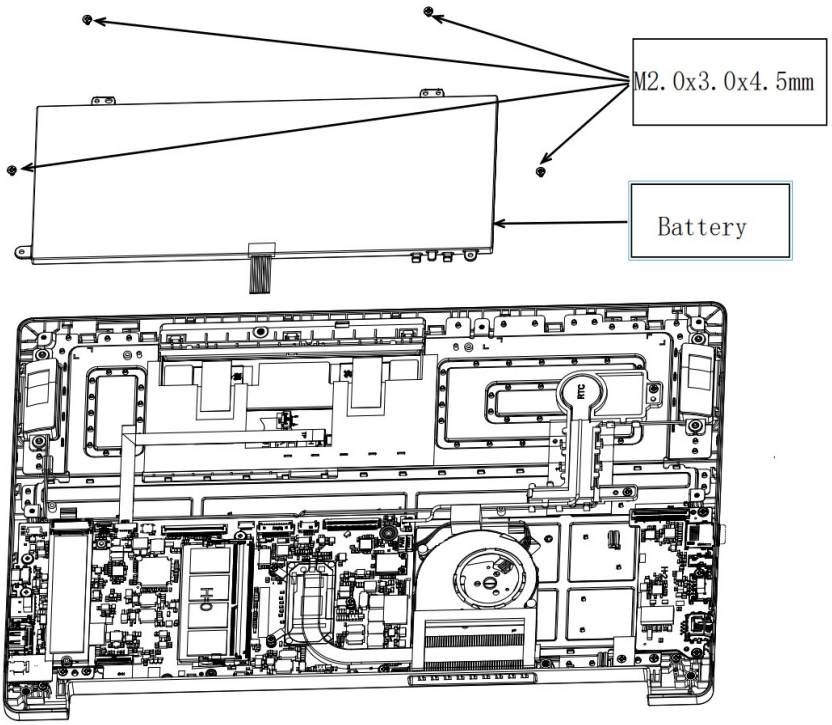


Figure 4-9Removing battery pack

NOTE: Dispose of the used battery packs as required by localordinances or regulations.

Installing Battery Pack

Install battery pack according to the following procedures and Figure 4-9.

CAUTION : The battery packs contain a lithium ion battery,which can explode due to improper replacement,use,handling,or disposal.Always dispose of the battery packs as required by local ordinances or regulations. Use only replacement batteries recommended by Toshiba.

NOTE: Visually check the battery's terminals.If they are dirty,clean them with a dry cloth.

1. Take a new or recharged Battery Pack.
2. Place Battery Pack in correct position.
3. Secure Battery with four M2.0x3.0x4.5 black Phillips head screws.
4. Check the battery screw hole ,if there is cracking,please replace the parts.
5. Connect Battery cable to CN3 on system board.
6. Installing Battery Maly.

4.4 SSD

Removing SSD

Remove SSD according to the following procedures and Figures 4-13.

CAUTION: Do not touch the connectors on SSD and in the computer with your bare hands. SSD can fail if they are contaminated with sweat, natural oils, etc. from your hands.

1. Remove thermally conductive pad
2. Remove one M2.0x2.5x5.0 black Phillips head screw securing the SSD.
3. Pull SSD from CN8 on system board.

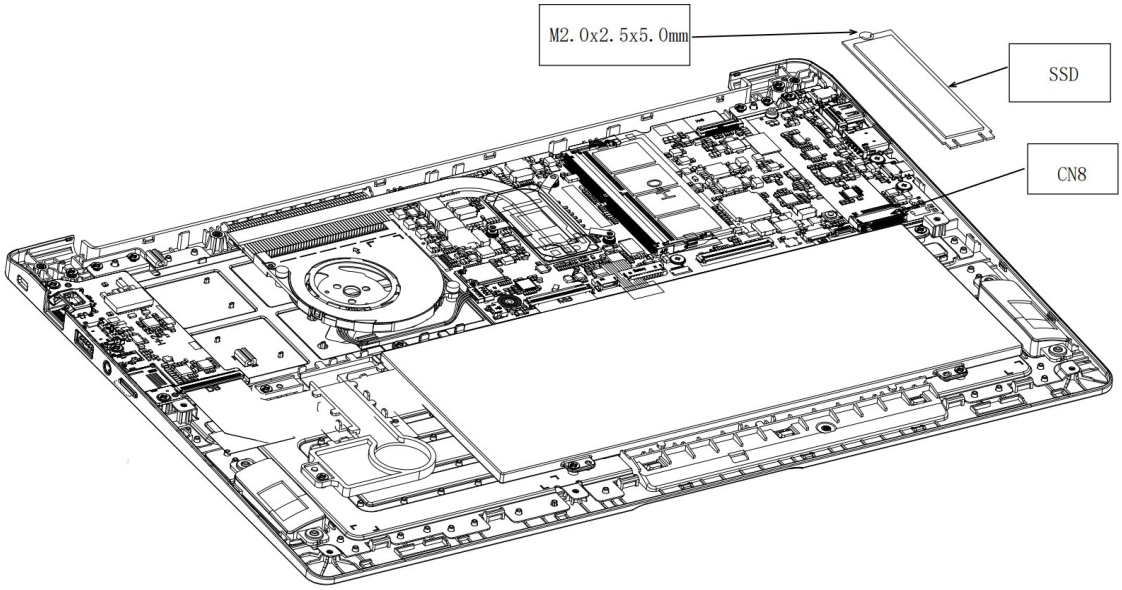


Figure 4-13Removing SSD

Installing SSD

Install SSD according to the following procedures and Figures 4-13.

1.Insert SSD into CN8 on system board.

2.Secure it with one M2.0x2.5x5.0 black Phillips head screw.

3.Install thermal silica gel

CAUTION：Do not touch the connectors on SSD and in the computer with your bare hands. SSD can fail if they are contaminated with sweat, natural oils, etc. from your hand

4.5 SODIMM

Removing SODIMM

Remove SODIMM according to the following procedures and Figures 4-14.

CAUTION：Do not touch the connectors on SO D IM M and in the computer with your bare hands. SO D IM M can fail if they are contaminated with sweat, natural oils, etc. from your hands.

1.Press both sides of the J1 connector shrapnel 15° with both index fingers

2.Take out the SODIMM at 45° horizontal

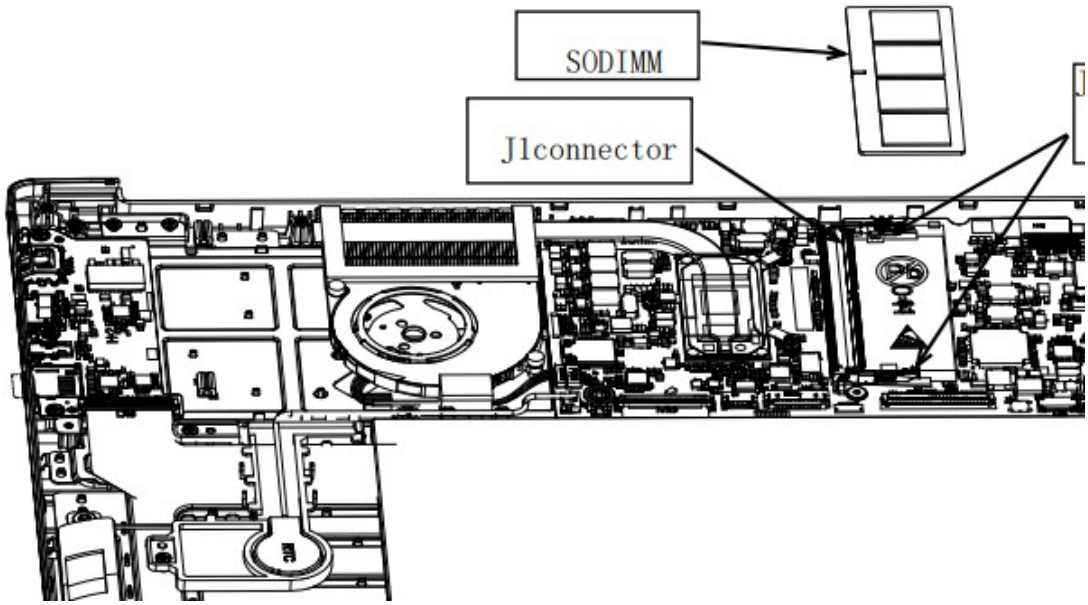


Figure 4-14 Removing SODIMM

Installing SODIMM

Install SODIMM according to the following procedures and Figures 4-14.

1.Aim the SODIMM at the JI slot

2.Lightly press the SODIMM upper and lower sides with two fingers

CAUTION: Do not touch the connectors on SO D IM M and in the computer with your bare hands. SO D IM M can fail if they are contaminated with sweat, natural oils, etc. from your hands

4.6 LC D Module Assem bly

NOTE: Touch SKU will provide the FRU parts as LCD Module Assembly.

Removing LCD Module Assembly

Remove LCD Module Assembly according to the following procedures and Figure 4-17.

1. Remove tape for fasten LCD cable.
2. Remove PC gasket from WIFI module Remove plastic chips on wifi module.
3. Disconnect LCD cable from CN6 on system board.
4. Released wireless antenna cables from top cover latch.
5. Open LCD Module Assembly at an angle of 90 degrees.
6. Remove six M2.0x5.5x4.5 black Phillips head screws securing LCD Module Assembly with top cover.
7. Remove LCD Module Assembly.

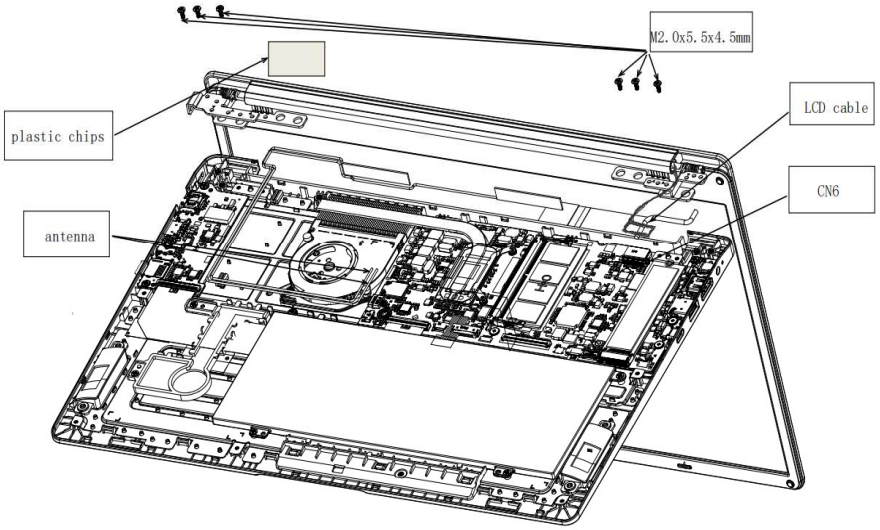


Figure 4-17 Removing the LCD Module assembly

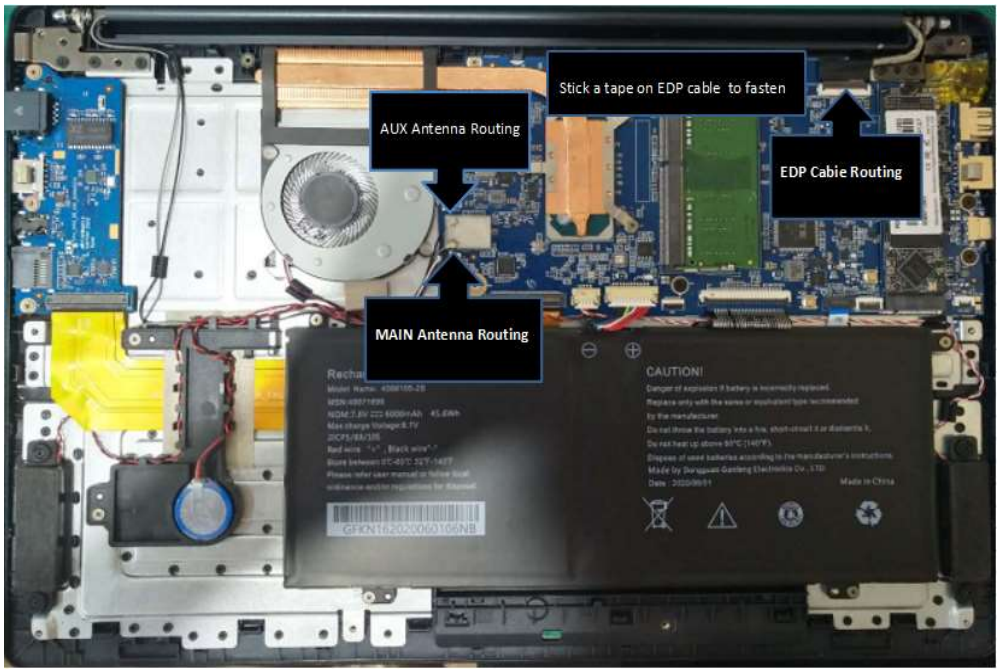


Figure 4-18 Removing the LCD Module assembly

Installing the LCD Module Assembly

Install the LCD Module Assembly according to the following procedures and Figure 4-17and 4-18.

1. Place the LCD Module Assembly in the correct position.
2. Secure LCD Module Assembly with four M2.0x5.5x4.5 black Phillips head screws.

   (▲ mark portions)
3. Close LCD Module Assembly.
4. Note the module definition :grey wire connects MAIN interface and black wire connects AUX
5. Routing antenna cables under Rib on Top cover to secure antenna cables according to Figure 4-18.
6. Put the PC gasket back on the WiFi module Install plastic chips on wifi module.
7. Connect LCD cable to CN6 on system board.
8. Routing LCD cable according to Figure 4-18, need to under Rib on Top Cover.
9. Stick tape to fasten LCD cable.

4.7 CPU Cooling Module and Fan

CAUTION: When removing CPU Cooling Module and Fan, keep following in mind:
The CPU Cooling Module can become very hot during operation. Be sure to let it cool down before starting the repair work. Hold Fan on its outline, do not press on its center.
Do not touch or cause damage to the fan in the CPU Cooling Module.

Remove CPU Cooling Module and Fan_VGA SKU only

Remove CPU Cooling Module and Fan according to the following procedures and Figures 4-19 and 4-20.

1. Remove cushion for FAN.
2. Remove four M2.0x3.0x4.5 black Phillips head screws securing CPU Cooling Module.
3. Remove CPU Cooling Module.
4. Disconnect Fan cable from CN21 on system board.
5. Remove the plastic pad from the fan screw.Remove the plastic pad from the fan screw.
6. Remove two M2.0x3.0x4.5 black Phillips head screws securing Fan.
7. Remove FAN.

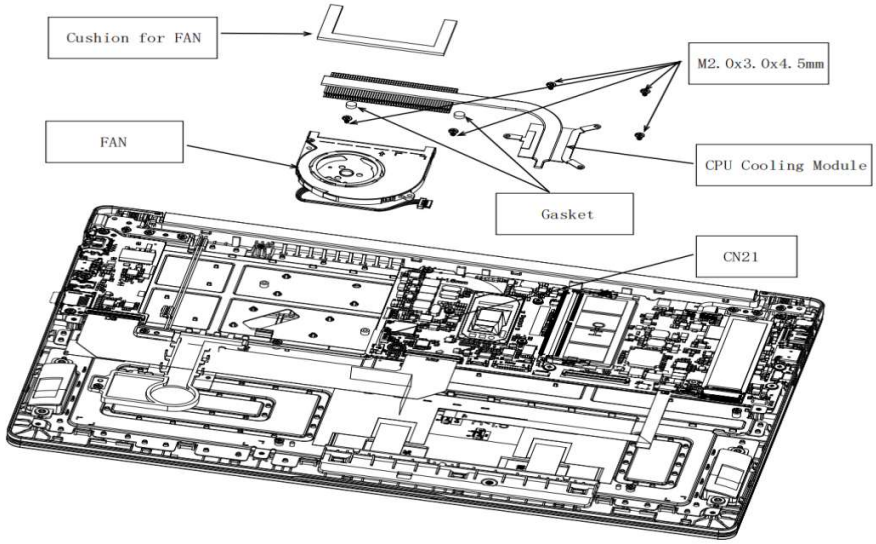


Figure 4-19Removing the CPU Cooling Module and Fan

Figure 4-20 Applying silicon grease

4.8 System Board

Removing System Board

Remove System Board according to the following procedures and Figures 4-21.

1. Disconnect the following cable from the connector on System Board: -
   Speaker cable from SPK.
   - LCD cable from CN6.
   - IO Board cable from CON19
   - Touch Pad cable from TPCON1.
   - Keyboard cable from KBCON1.
   - FAN cable from CN21.
   - Battery Pack cable from CN3.
   - RTC Battery from RTCCN1.
   - Released wireless antenna cables from top cover latch.
2. Remove two M2.0x3.0x4.5and three M2.0x2.5x5.0 black Phillips head screw securing System Board.
3. Remove System Board.
4. Remove the high position adhesive paper of DC seat

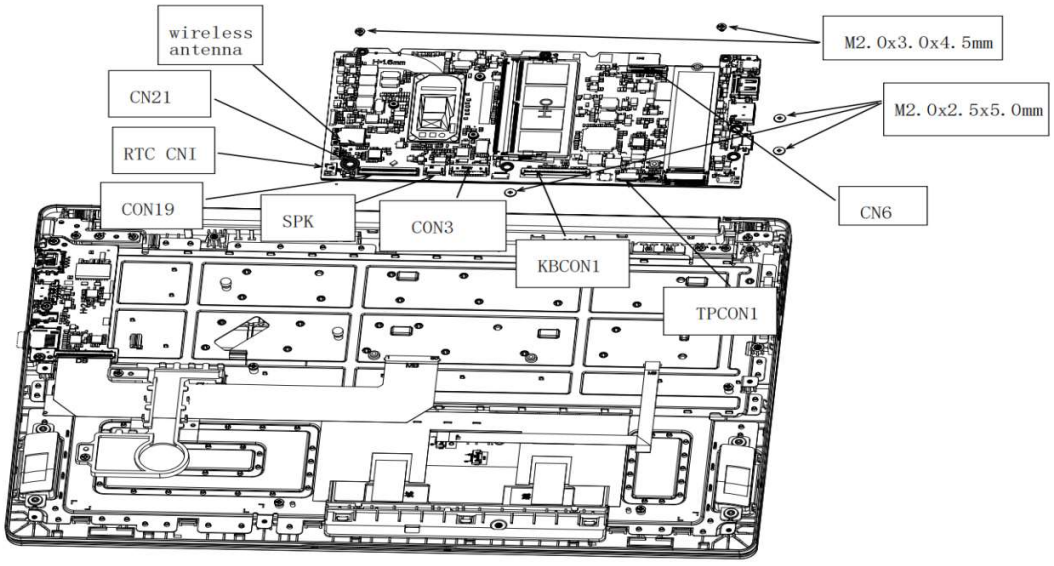


Figure 4-21 Removing System Board

Install System Board according to the following procedures and Figures 4-21.

1. Place System Board in correct position.
2. Securing System Board with two M2.0x3.0x4.5and three M2.0x2.5x5.0 black Phillips head screw.

   (▲ mark portions)

3. Connect following cable to the connector on System Board:

   - Speaker cable from SPK.
   - LCD cable from CN6.
   - IO Board cable from CON19
   - FFC-MB terminal connected to TP-CON1
   - keyboard connection KBCON1,over the speaker wire wiring. -
   FAN cable from CN21.
   - Battery Pack cable from CN3.
   - RTC Battery from RTCCN1.
   - Released wireless antenna cables from top cover latch. -
   Place System Board in correct position
   - DC block paste high temperature adhesive paper

NOTE:

Be sure to place all cables into the ditch to avoid the damage during assembling the bottom cover.

NOTE:

Be sure to align Type-C connector to Top Cover, when place system board on the unit..

4.9 IO Board

Removing IO Board

Remove IO Board according to the following procedures and Figures 4-23.

1. Disconnect the following cable from the connector on IO Board: -
   IO Board cable from JDB1
2. Remove three M2.0x3.0x4.5 black Phillips head screw securing IO Board.
3. Remove the IO panel Myla.

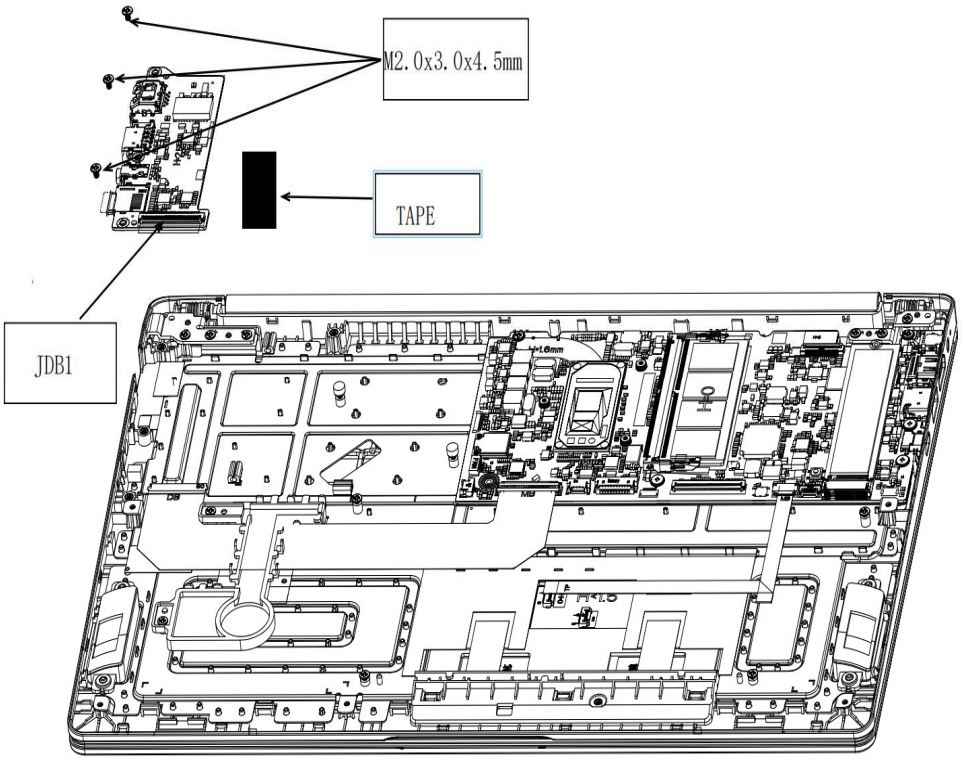


Figure 4-23 Removing IO Board

Install IO Board according to the following procedures and Figures 4-23.

1. Place IO Board in correct position.
2. Securing IO Board with three M2.0x3.0x4.5 black Phillips head screw.
3. Connect following cable to the connector on System Board:

    -IO Board cable from JDB1

4. Stick tape on the IO Board.

4.10 Speaker

Removing Speaker

Remove Speake according to the following procedures and Figure 4-25.

1. Disconnect Speaker cable from SPK on system board.
2. Remove left and right Speaker.

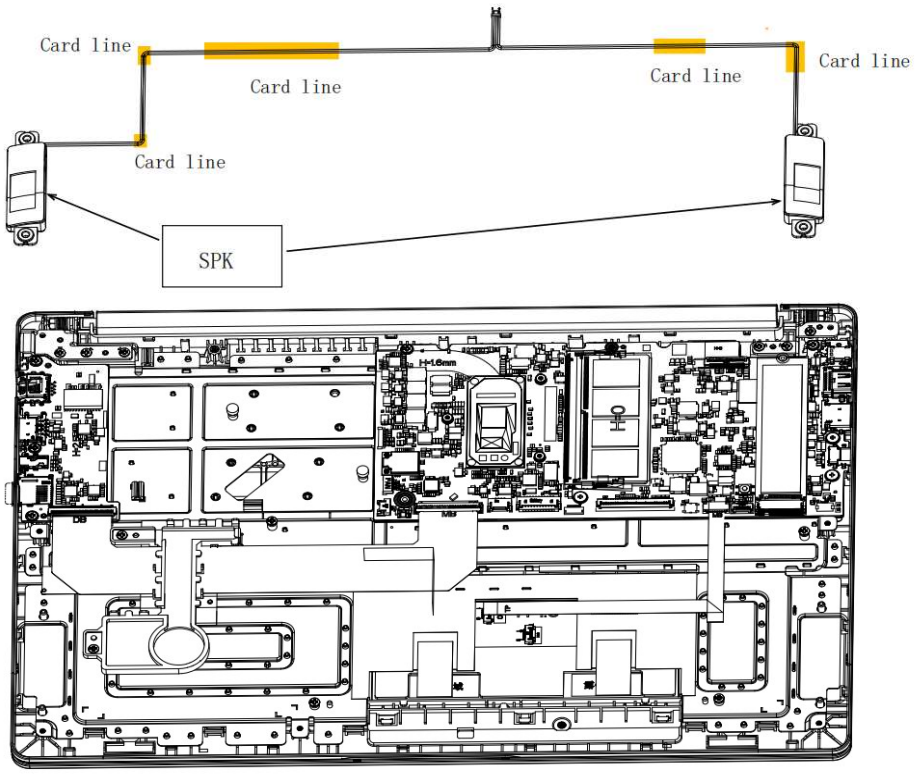


Figure 4-25 Removing Speaker

Installing Speaker

Install Speaker according to the following procedures and Figure 4-25.

1. Place speaker in correct position.
2. Connect speaker cable to SPK on system board

4.11 LCD M odule Mask

NOTE: This chapter is only for Non-Touch SKU. We provide Touch Panel Assembly for Touch SKU.

Remove the LCD Module Mask

Removing the LCD Module Mask according to the following procedures and Figure 4-11 & 4-12.

1. 1.Remove four Black (Remove the four rubber footpads from the B shell)
2. Remove four M2.0x3.0x4.5 black Phillips head screws securing the LCD Module Mask as Figure 4-11 shown .
3. Insert your finger between the edge of LCD Module Mask and the LCD panel by twist in correct indication and follow step 1, 2 & 3 to release the latches as Figure 4-27 shown.
4. Remove the LCD Module Mask while unlatching the LCD Module Mask.

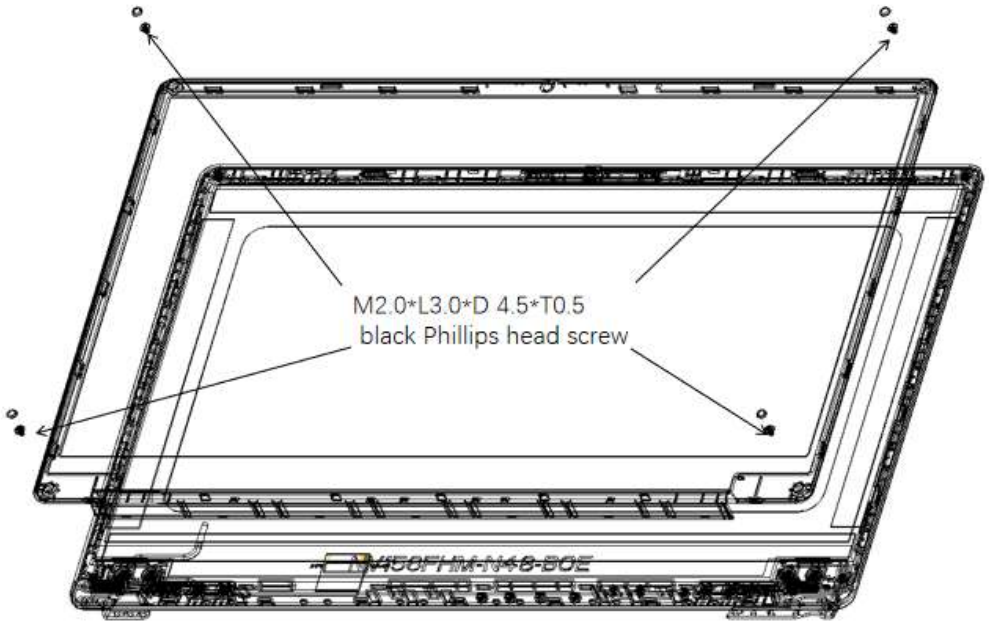


Figure 4-27 Removing the LCD Module Mask

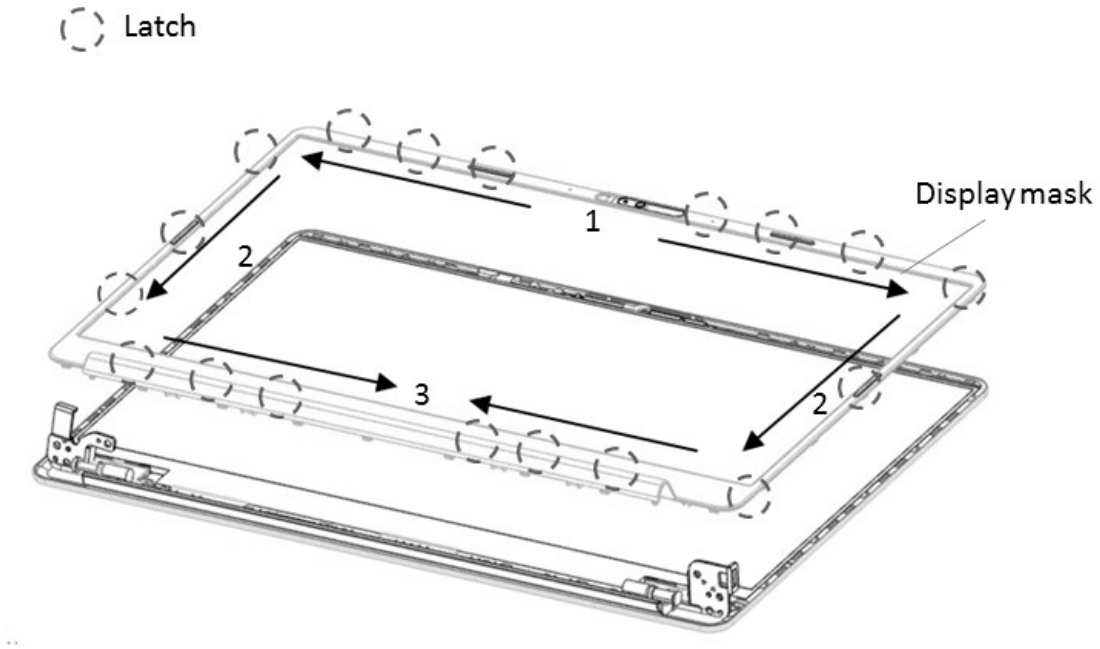


Figure 4-28 Removing the LCD Module Mask

Installing the LCD Module Mask

Install the LCD Module Mask according to the following procedures and Figure 4-27 & 4-28.

1. Install the LCD Module Mask and follow step 3, 2 & 1 to press & lock the latches.
2. Securing the LCD Module Mask with four M2.0x3.0x4.5 black Phillips head screw.
3. Install 4 rubber foot pads Install four plastic pads.

NOTE: When installing the LCD Module Mask, ensure there is no gap between the LCD Module Mask and the LCD module cover.

NOTE: Do not lose the Camera Shutter.

4.12 LC D Panel

NOTE: Touch SKU will provide the FRU parts as LCD Module Assembly.
This chapter only for Non-Touch SKU.

NOTE: ICs are fragile. Use extreme care not to apply pressure to the ICs along the edges of the LCD module.

NOTE: Dispose of used LCD Panel (fluorescent (FL) tubes) as required by local ordinances or regulations.

NOTE: The LCD cable must be carefully peeled away before disconnecting it from the module.

Removing the LCD Panel

Remove the LCD Panel according to the following procedures and Figures 4-29 & 4-30.

1. Follow the Figure 4-29 direction 1 to lift up LCD panel.
2. Carefully tilt the LCD module toward you.
3. Turn the LCD upside down. Be sure to place it on a cushioned surface such as a foam pad.
4. Remove the tape and LCD cable connector. Then disconnect the LCD cable as Figure 4-30 shown.

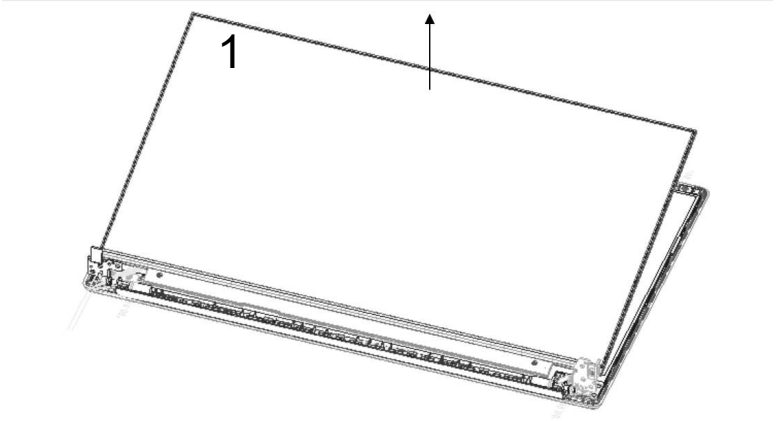


Figure 4-29 Removing LCD Panel follow direction 1.

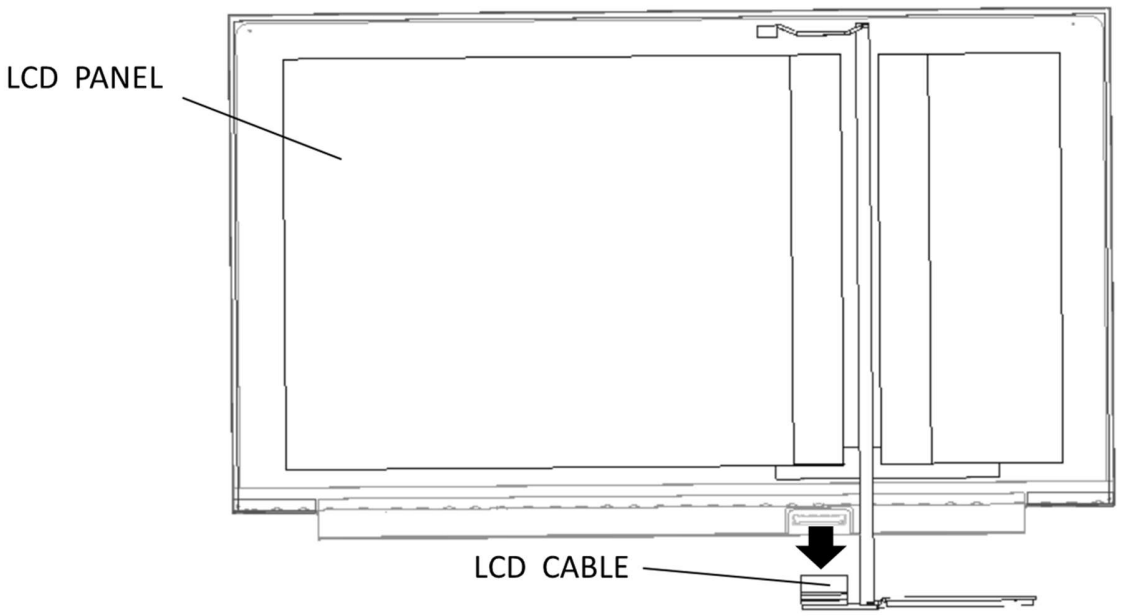


Figure 4-30 removing the LCD cable

Installing the LCD Panel

NOTE: LCD/FL cable must be carefully peeled away before disconnecting it from the module.

Install the LCD Panel according to the following procedures and Figures 4-29and4-30

Installing the LCD panel

Install the LCD Panel according to the following procedures.

1. Turn the LCD upside down.
2. Connect the LCD cable to the LCD module connector as Figure 4-30-1 shown.
3. Lift LCD panel top side up as Figure4-30 shown anbottom side down on the LCD module cover.
4. d then place the LCD panel Check LCD cable below the LCD module cover latch as Figure 4-30 shown.

CAUTION: When installing the LCD module, please follow below instruction:
When plug in LCD/FL cable into LCD panel connector, need to plug horizontally.

4.13 CC D Module

NOTE: Touch SKU will provide the FRU parts as LCD Module Assembly. This chapter only for Non-Touch SKU.

Removing the CCD Module

Remove the CCD Module according to the following procedures and Figure 4-33

1. Lift the CCD Module from the LCD module cover.
2. Disconnect LCD cable from CCD Module connector.

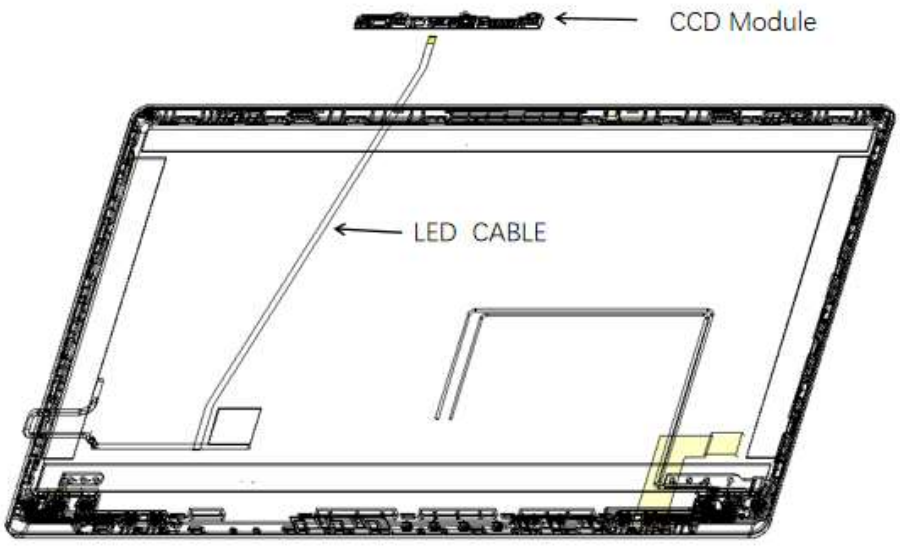


Figure 4-33Removing the CCD Module

Installing the CCD Module

Install the CCD Module according to the following procedures and Figure 4-33.

1. Remove CCD Module release paper.

2.Connect LCD cable to CCD module connector.

3.After ripping off FPC release paste FPC into shell LCD cover.

4.Seat the CCD Module in the correct position.

5.Route the LCD cables according to Figure 4-29, place the cable into the ditch and correct position. Avoid to pinching the cables.

4.14 Touch pad

Removing T ouch pad

Remove Touch pad according to the following procedures and Figures 4-35.

CAUTION: Do not touch the connectors on Touch pad and in the computer with your bare hands. Touch pad can fail if they are contaminated with sweat, natural oils, etc. from your hands.

1.Separate the touchpad from the C shell

2.Detach the bracket from the trackpad

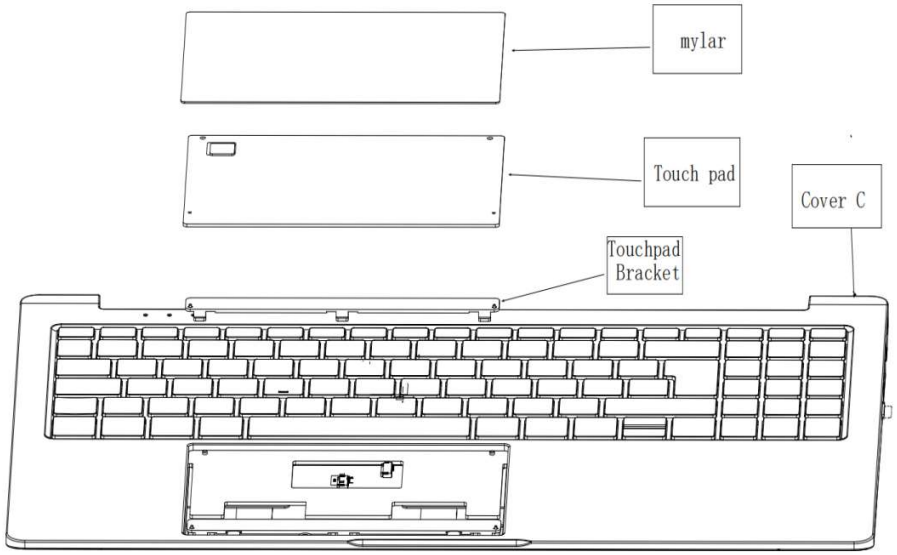


Figure 4-35 Removing Touch pad

Installing Touch pad

Install Touch pad according to the following procedures and Figures 4-35.

1.Tear off 3MM adhesive release paper 2.Paste the touchpad holder

3.Tear off fingerprint high temperature tape

4.Tilt the touchpad to 45°, put the bottom into the C shell, paste and press

5.Remove the mylar release paper and paste the adhesive

CAUTION: Do not touch the connectors on Touch pad and in the computer with your bare hands. Touch pad can fail if they are contaminated with sweat, natural oils, etc. from your hands